

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

SITE REASSESSMENT REPORT

FOR

METALS REFINING COMPANY

HAMMOND, INDIANA

LAKE COUNTY

U.S. EPA ID: INN000509964

January 28, 2010 (revised)

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## SECTION I

### INTRODUCTION

The Indiana Department of Environmental Management (IDEM), Office of Land Quality (OLQ), Site Investigation Section, under a Cooperative Agreement (CA) with the United States Environmental Protection Agency (U.S. EPA), Region V Office, has been funded to perform Site Reassessments (SR) at certain sites listed in the Comprehensive Environmental Response, Compensation, and Liability Information System. This work is conducted under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (a.k.a. Superfund), and the Superfund Amendments and Reauthorization Act (SARA) of 1986.

The primary objectives of the SR are:

- to collect readily available information and conduct a site and environs reconnaissance;
- to distinguish between sites that pose little or no threat to human health and the environment and sites that require further investigation;
- to identify sites requiring assessment for possible emergency response actions.
- to incorporate new data

The Site Investigation Section was given approval by U.S. EPA to conduct a Site Reassessment at the Metals Refining Company property located in Hammond, Lake County, Indiana based on the results of a Pre-CERCLIS Screening (PCS) assessment that was conducted at the property, and new data that has since been obtained.

Information contained in this report will be used to evaluate the need for further activity under CERCLA.



## SECTION II

### SITE BACKGROUND

#### 2.1 INTRODUCTION AND SITE DESCRIPTION

This section discusses information obtained from previous investigations conducted at Metals Refining, and sampling conducted as part of these activities. Refining Company is located at 1723 Summer Street, Hammond, Lake County, Indiana. The latitude is N41 36' 14.87" and the longitude is W087 29' 13.28" (Appendix A). The facility is at the northwest corner of Summer Street and Hump Road and occupies approximately 10.5 acres. Summer Street runs northwest to southeast and forms the southwest boundary of the property. Summer Street is one of the principal thoroughfares in Hammond. Hump Road runs north-south along the east boundary of the property. Formerly, Hump Road passed beneath a railroad yard to a residential area north of the rail line. The underpass beneath the railroad has been blocked and access to the neighborhood now is by way of Indianapolis Boulevard to the east of the property. The property contains several large buildings; most of the buildings are long and narrow, typical of buildings associated with metals smelting and fabrication. An office building is located at the corner of Summer Street and Hump Road. The property has been abandoned since at least 2002, but the date the facility closed is unknown. The ground surface around the buildings is completely paved. The only unpaved area is the north-west portion of the facility. The unpaved area is wooded and contains piles of waste material.

Census data and aerial photography show that more than 7,000 residents are located within one (1) mile of the site (Appendix H). The closest residence is located approximately 500 feet west of the facility and several other residents live within 2000 feet of the site. The railroad yard is located north of the site. To the east of the facility across Hump Road is a sand and gravel storage area. Along Summer Street to the southeast are industrial, commercial, and storage buildings. More commercial development is located across Summer Street to the south and southwest of the facility.

#### 2.2 SITE HISTORY

Metals Refining Company was one (1) of 430 former lead smelting facilities that were identified by William Eckel in a study published in the American Public Health Journal (Appendix B). These facilities had not previously been investigated by U.S. EPA or by local health departments.

Eckel's concern was that air emissions of lead from these facilities potentially contaminated the soil in nearby residential areas. IDEM was asked by U.S. EPA to assess the lead facilities located in Indiana.

Historical records indicate that lead smelting began at the property with the construction of the Metals Refining facility in 1920. At the time, it was one of the largest secondary lead smelters in the United States and was also a lead oxide plant. Sanborn fire insurance maps show that lead was recycled at the site in the 1930s by the Glidden Company after they purchased the facility in the late 1920s. It is not known when lead smelting ceased at the facility.

Surface soil samples were collected for screening and/or laboratory analysis from the yards of the nearest residences in three (3) directions from the property as part of the 2002 William Eckel initiative and the 2008 US Smelter and Lead Refinery Expanded Site Inspection Report (USS Lead). See (Appendix D and E). Some of the soil samples, showed lead levels above the three (3) times background benchmark.

Since 2002, additional information has been assembled from other lead soil investigations conducted in the area that pertains to the Metals Refining site.

## SECTION III

### SITE REASSESSMENT PROCEDURES AND ANALYTICAL RESULTS

#### 3.1 INTRODUCTION

This section outlines the procedures, and observations of the Metals Refining Reassessment.

#### 3.2 RECONNAISSANCE INSPECTION

On January 19, 2010, SI staff performed a site reconnaissance at the Metals Refining site and the surrounding neighborhoods. The following observations were made during the Reconnaissance Inspection:

- 1) The Metals Refining facility was completely fenced, but had large sections of fence removed on the east and north sides of the property.
- 2) The buildings at the site were in various stages of decay and covered with graffiti. (Site Photos, Appendix K)
- 3) A small pile of tires and inner tubes were discovered on the east side of the property next to one of the buildings.
- 4) One of the buildings in the eastern portion of the property contained several 5 gallon buckets that appeared to have various chemicals in them.
- 5) Several drums were discovered in the north central portion of the property.

See the Site Features Map (Appendix C) for these and other visible details of the site.

During the reconnaissance, a total of 15 soil samples were screened in-situ via X-Ray Fluorescence (XRF) analyzer. Four (4) samples were obtained on the Metals Refining property and are identified as OS1 through OS4. Eleven samples were collected in the surrounding neighborhoods

and are identified as BK1, BK3, and BK5 through BK13. Five (5) of these samples were collected in the neighborhood to the west and southwest of the site. Three (3) samples were collected in the neighborhood to the east of the site, and three (3) samples were collected in the neighborhood northeast of the site. (Appendix L) These samples were located east and downwind (northeast) from the former Metals Refining facility. All samples were collected and analyzed using an XRF analyzer.

**Table 1: Metals Refining XRF Sample Location, Results and Comment Table**

SAMPLE #	XRF SCREENING RESULTS	LOCATION	COMMENTS
OS1 (Onsite)	Pb-5128.27 ppm As-308.36 ppm	East side of Metals Refining (MR) site, next to building	First inch of soil, sandy soil and dark in appearance
OS2 (Onsite)	Pb-5098.62 ppm As-230.69 ppm	North side MR property	First inch of soil, dark and sandy with some debris
OS3 (Onsite)	Pb-26.48 As-ND	Northwest corner of MR property	First inch of soil, dark and sandy, some rocks
OS4 (Onsite)	Pb-20786.02 ppm As-ND	Southwest corner of MR property	First inch of soil, dark and sandy, fill material
BK1	Pb-215.52 ppm As-ND	1344 Sherman, yard	First inch of soil, dark and sandy
BK3	Pb-51.24 As-ND	Corner of Conkey and Tapper Street	First inch of soil, dark and sandy
BK5	Pb-162.75 ppm As-58.53 ppm	Corner of Columbia and Kenwood Street	First inch of soil, dark and less sandy
BK6	Pb-110.46 ppm As-ND	Close to corner of Conkey and Rhodes Street	First inch of soil, dark and sandy
BK7	Pb-206.78 ppm As-23.33 ppm	Triangle Park off May Street	First inch of soil, dark, sandy and frozen
BK8	Pb-76.97 ppm As-ND	Corner of Arizona and Columbia Street	First inch of soil, dark and sandy
BK9	Pb-47.64 ppm As-ND	Corner of Delaware and Cleveland Street	First inch of soil, dark and sandy
BK10	Pb-8.54 ppm As-ND	6539 Marshall Street	First inch of soil, dark and sandy
BK11	Pb-130.92 ppm As-ND	1940 Clay Street	First inch of soil, dark and sandy
BK12	Pb-16.10 ppm As-ND	5700 Baring Street	First inch of soil, dark and sandy
BK13	Pb-108.39 As-ND	5637 Northcote Ave.	First inch of soil, dark and sandy

### 3.3 REVIEW OF DATA GENERATED FROM PREVIOUS INVESTIGATIONS OF NEARBY LEAD FACILITIES.

As Mentioned in section 2.3, new lead soil data has been obtained from investigations of other sites in the area. The Eckel report identified several other facilities in the same area that were suspected to have released lead to the environment. The other facilities listed in the report include

USS Lead Refinery, Inc., International Lead Refining Co., Eagle Picher Co., Anaconda Lead Products, US Reduction Co., Marport Smelting Co., Halstab Division Hammond Lead, and Hammond Lead Products. (Appendix N) In 2002, SI also collected soil samples at some of these facilities in addition to Metals Refining. The sample results from neighborhoods to the northeast and west of the Metals Refining site indicated soil lead concentrations ranging from 17 ppm to 6600 ppm. (Appendix D)

In 2007, the U.S. EPA requested that the Site Investigation Section of IDEM evaluate and assess potential background soil sample locations near the USS Lead facility. To achieve this goal, the "U.S. Smelter and Lead Refinery, Inc., Background Sample Location Report" was produced. No samples were collected as part of this report. The Background Sample Location Report was used as a guide to determine appropriate background sample locations for the Metals Refining site. (Appendix F)

In 2008, an Expanded Site Inspection (ESI) (Appendix G) was conducted for the USS Lead facility (USS Lead), which is one of the facilities referenced in the Eckel report. Numerous soil samples were collected as part of the ESI activities. Soil samples were collected north of the Grand Calumet River, and northeast of the USS Lead site within a residential area. Analytical review indicated soil lead concentrations ranging from 182 ppm to 1680 ppm. During this investigation, soil samples were also collected in an area south of the Grand Calumet River and southeast of the USS Lead facility.

These samples were located east and down wind from the former Metals Refining facility. Soil samples from this area indicated soil lead concentrations ranging from 134 ppm to 376 ppm (Appendix E). Staff also collected four soil samples to establish a representative background concentration level for lead in the area's soils. The location of these background samples were based on locations deemed suitable in the Background Sample Location Report. Lead results for the background samples indicated that lead levels ranged from 62 ppm to 165 ppm. Conservatively, a background lead concentration of 165 ppm is assumed.

## SECTION IV

### DISCUSSION OF MIGRATION PATHWAYS

#### 4.1 INTRODUCTION

Potential migration pathways for contaminants at Metals Refining are discussed in this section. Potential migration pathways include: ground water, surface water (including drinking water, human food chain, and environmental), air and soil exposure.

#### 4.2 GROUND WATER PATHWAY

The ground water pathway is not considered a pathway of concern for the Metals Refining facility. Ground water is not known to be used as a public drinking water supply in the area. The public water supply for Hammond and surrounding communities is furnished by surface water from Lake Michigan which is located more than 4 miles away. Well logs from the area show only wells that are used for irrigation and industrial purposes and some test wells installed by geological survey groups. These wells indicate mostly sand exists to a depth of about 20 feet, then finer grained clay to limestone.

#### 4.3 SURFACE WATER PATHWAY

The surface water pathway was not included as part of this investigation. There are no drinking water intakes located in the vicinity of the facility. The public water supply for Hammond and other nearby public water supply systems comes from Lake Michigan, more than four miles from the property. (Appendix I) The City of Hammond's intake along with three other surface water intakes are located within the 15 mile target distance limit (TDL) for the Metals Refining site. Sampling for water quality standards at three of the four intakes, including the city of Hammond's, did not indicate any detections for any of the contaminants of concern associated with the site. Lead levels of 0.013 ppm were detected in the Indiana American Water-Northwest intake located northeast of the site which services residents of Lake County. Of the four intakes in Lake Michigan within the 15 mile surface water pathway, one intake, the East Chicago Water Works, exists that is closer to the Metals Refining site than the Indiana American Water-Northwest intake which displays low levels of

lead. It is highly unlikely that the source of lead in the Indiana American Water-Northwest intake is from the Metals Refining site.

Surface water from the facility is not known to impact a fishery. Surface water from the facility goes to the Grand Calumet River approximately one mile north of the facility. Depending on the water level in Lake Michigan and on flow control structures in the Indiana Harbor Canal, water in the Grand Calumet River may flow north through the Indiana Harbor Canal to Lake Michigan or west into Illinois in the Grand Calumet River. (Appendix I) The Grand Calumet River is closed to all fish consumption by a Level 5 fish advisory for polychlorinated biphenyls (PCB) and mercury. Other contaminants including lead could possibly impact the human food chain, but have not yet been detected. PCB's and mercury are not suspected contaminants from the Metals Refining Company, thus the human food chain does not appear to be affected by this site. No sensitive environments are near the site, however, there are many state rare or endangered species known to exist in the vicinity of the property (Appendix J). The property is paved and no longer active, thus the property would not be a suitable habitat for rare or endangered species and the pavement would prevent rare or endangered species from being exposed to contaminants from the facility. It is unknown if there is any affect from off-site migration to any of the endangered species in the area.

#### 4.4 AIR PATHWAY

The air pathway is the route by which lead and other metals may have migrated from the property while the facility was conducting smelting operations. Metals may have been discharged in exhaust from a stack on the facility during the smelting operations. Also, piles of material may have been located on the property that could have spread metal dust downwind through the air pathway. There is no observed release of lead into the air from the site and no record of any other releases. No operations take place at the site currently that might magnify dispersal of lead into the air. The air pathway is no longer considered viable and was not investigated as part of this assessment.

#### 4.5 SOIL EXPOSURE PATHWAY

The soil exposure pathway is the pathway of concern at Metals Refining. Airborne lead and perhaps other metals may have migrated off the facility during the time the facility was operating. These metals would have been deposited most heavily near the facility. A number of residential

neighborhoods are located within one (1) mile of the property. Air modeling conducted in conjunction with the investigation of the USS Lead facility approximately two (2) miles northeast of Metals Refining showed that the wind rose applicable for the area could be in all directions, with some directions being more predominant than others.

Metals Refining is mostly paved limiting most exposure to contamination from on site soils. The concern is that nearby residents, especially children, may be exposed to lead and other metals from Metals Refining through contaminated soil that was transported into their residential yards.

A significant level of lead for the purposes of Superfund is considered to be three (3) times the established background concentration. As stated in Section 3.3, 165 ppm is considered the background lead concentration for Metals Refining. The majority of samples obtained east of the Metals Refining site for the 2008 USS Lead report, were found to be less than three times background concentrations. Since the wind is predominantly from a westerly-southwesterly direction as discussed in the Background Study report, samples obtained immediately East and Northeast of Metals Refining would be attributable to the Metals Refining site.

A review of the 2002 Metals Refining lead sampling data and the 2008 USS Lead sampling data indicates that the majority of samples collected northeast of the USS Lead site, were also down wind, from the Metals Refining site (Appendix D, and E). Based on the existing research it appears that all elevated levels of lead north of the Grand Calumet River, are more likely attributable to facilities other than Metals Refining. The Remedial Investigation/Feasibility Study (RI/FS) that will be conducted as part of the Superfund process for USS Lead will verify this assumption.

Samples collected on January 19, 2010 with the XRF analyzer were screened at the point of collection for lead and arsenic. Samples OS1-OS4 were collected on the Metals Refining property. Samples OS1, OS2, and OS4 indicated elevated of lead levels (ranging from 5,128.27 ppm to as high as 20,786 ppm) onsite. Three (3) samples were collected in the residential neighborhood downwind and to the northeast of the facility to confirm data obtained in 2002. These samples were designated as BK11 through BK13 and were all non-detect (ND) for arsenic and remained consistent with lead background levels (ranging from 16.1 ppm to as high as 130.92). (Appendix M)



Three (3) more samples were collected in residential neighborhoods to the east-southeast of the site to confirm data from the USS Lead ESI. These samples are identified as BK8 through BK10. Arsenic was ND and lead concentrations (ranging between 8.54 ppm to as high as 76.97 ppm) remained consistent with background levels. (Appendix M) An additional five (5) samples were collected in the residential neighborhood to the west and southwest of the site. These samples are used to fill the only remaining data gaps to confirm determined background levels for lead in the area are accurate. These samples are identified as BK1, BK3, and BK5-BK7. BK2 and BK4 were erroneous readings due to operator error of the XRF analyzer and were not used as part of this investigation. All samples were ND for arsenic and remained consistent with the determined lead soil background concentrations.

The exposure from lead to the residents surrounding Metals Refining appears to be minimal based on the findings from the current and previous investigations.

## SECTION V

### SUMMARY AND CONCLUSIONS

Metals Refining is a former metals fabricating facility where lead smelting is believed to have occurred many decades ago. The facility was included on a list of lead smelting facilities compiled by William Eckel of U.S. EPA, that had never been investigated. In 2002, surface soil samples were collected from residential yards in three (3) directions from the facility. In 2007, a background study was conducted in the nearby area to determine sample location for establishing background levels for the USS Lead site. In 2008, an ESI was conducted for the USS Lead Facility. Four (4) soil samples were collected to establish the lead background concentrations and several more samples were collected in the residential neighborhoods to the northeast and southeast of the USS Lead facility which is northeast and downwind of the Metals Refining site. In 2010, XRF soil screening samples were collected northeast of Metals Refining to confirm data collected in 2002, and southeast to confirm data collected in 2008. As part of the 2010 sample event, samples were also collected to the west and southwest to fill all remaining soil lead background concentration data gaps.

Data from the 2002 sampling event, information collected for the 2007 background study for USS Lead, data collected from the 2008 the background study for USS Lead, data collected from the 2008

Expanded Site Inspection for the USS Lead site and XRF soil screening samples collected in 2010 were used to determine that Metals Refining was not a major contributor to high levels of lead that may be found in this area of Hammond Indiana.

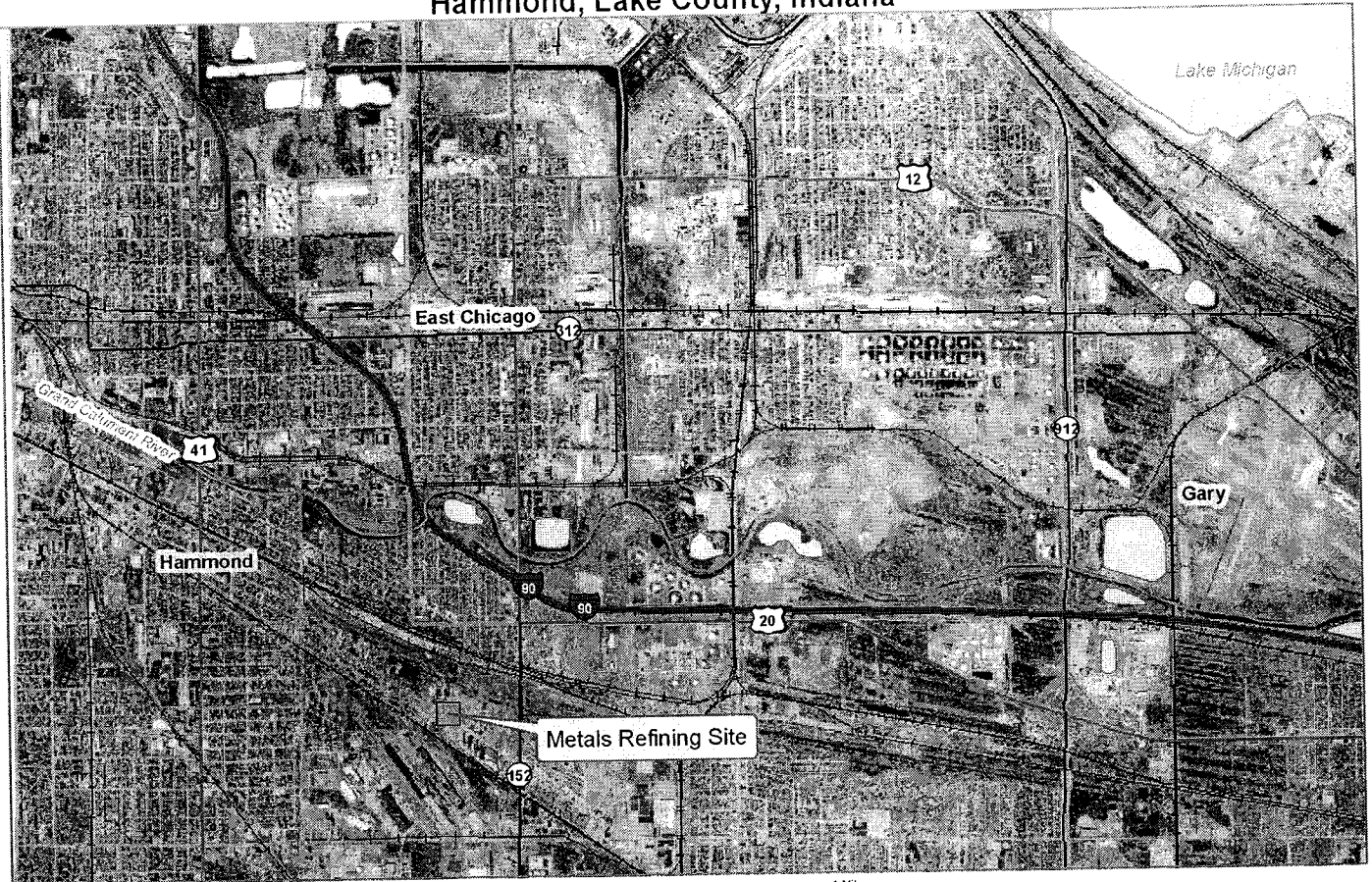
## SECTION VI

### RERERENCES

1. Sanborn Insurance Maps, 1930.
2. Sanborn Insurance Maps, 1939.
3. U.S.G.S. Topographic Map, Highland Quadrangle, 1991.
4. Metals Refining Pre-CERCLIS Screening report, 2003.
5. Hammond Lead Products website: [www.hammondleadproducts.com](http://www.hammondleadproducts.com)
6. Funding Universe website: [www.fundinguniverse.com/company-histories/TheGlidden-co](http://www.fundinguniverse.com/company-histories/TheGlidden-co).

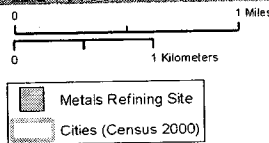
## ATTACHMENT A

# Site Location Map - Metals Refining Hammond, Lake County, Indiana



This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

Mapped By: Lorraine Wright, Office of Land Quality  
Date: January 19, 2010



Sources:  
Non Orthophotography  
Data - Obtained from the State of Indiana  
Geographic Information Office Library. Site location was digitized.  
Orthophotography - Obtained from Indiana Map Framework  
Data, 2005 Aerial ([www.indianamap.org](http://www.indianamap.org))  
Map Projection: UTM Zone 16 N Map Datum: NAD83

## ATTACHMENT B

April 3 1990

## Lead-Filled Lots Study Says Potentially Toxic Sites Unlisted

By Rose Palazzolo

CO-NEWS.com

April 3 — Hundreds of former lead smelting factory sites, some next to residential neighborhoods, could contain toxic levels of lead and no regulatory agency is aware of them, according to a new survey.

The study, released in the *American Public Health Journal*, cites 430 former lead smelting factories that are apparently not listed by the Environmental Protection Agency or local Health Departments.

"It's a potentially dangerous finding," said William Eckel, who conducted the study as part of his doctoral thesis at George Mason University in Fairfax, Va. He did the investigation in collaboration with his advisor, Gregory Foster and Michael Rabinowitz, a geochemist with the Marine Biological Laboratory in Woods Hole, Mass.

### Potentially Hazardous Lead Levels in Soil

In the study, Eckel lists the sites of 640 former lead smelting factories in 35 states, which he says are filled with potentially hazardous levels of lead in the soil. Most of the sites are concentrated in industrial centers including Brooklyn, N.Y., Detroit, Baltimore, Los Angeles and Chicago. Eckel said he found the sites by looking in old industry directories and cross checked his findings with federal and state databases. He spent six years combing through the databases and books.

Lead smelting factories reclaim the lead in items such as car batteries and convert it back to pure lead and lead alloys. To counter the leeching of contaminants sites are either paved over or cleaned up by EPA officials. But Eckel claims that at least 430 or two-thirds of former lead smelting sites he identified were not known by the EPA or by State Departments of Health and therefore weren't paved over or cleaned up.

Although Eckel currently works at the Environmental Protection Agency, the EPA had nothing to do with his study and would not comment on the findings.

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Calcium  
Lead Wa  
Necklac  
Lead Is I  
Blood L  
Rise in  
Cavities  
Lead Ex  
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Delinqu

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"It's impossible for us to comment on a study that we haven't even seen," said EPA spokesman Chris Paulitz. "Also, it is hard for us, as a new agency, to comment on what a previous agency [under former President Clinton] may or may not have done in terms of listing potential hazardous sites."

#### Potential For Great Lead Damage

Eckel, who now works at the pesticides division of the EPA, said that his study should send out an alarm. "If these sights are still contaminated and haven't been paved over there is potential for great lead damage here," he said.

While touring several sites in Pennsylvania and Baltimore Eckel noted that more than a few were just across from homes. One site was actually underneath an elevated section of a freeway next to the Orioles Stadium in Baltimore. When he tested these sites their lead levels exceeded those allowed by federal law for industrial sites and seven of the sites had levels exceeding the residential maximum.

"Not all the sites are necessarily contaminated, but they should all be checked out," Eckel said.

Large amounts of lead in a child's blood can cause brain damage, mental retardation, behavior problems, anemia, liver and kidney damage, hearing loss, hyperactivity, developmental delays and in extreme cases, death. There is new evidence that lead poisoning is harmful at blood levels once thought safe. Lower IQ scores, slower development and more attention problems have been observed in children with very low lead levels.

"Lead affects nearly every system of the body," says Barbara Materna, chief of the Occupational Lead Poisoning Prevention Program of the California Department of Health Services. Because it can cause so much damage, lead is the only environmental toxin for which children are routinely screened. Lead in the bloodstream can also lead to nerve damage and kidney failure and, in adults, infertility, miscarriages, and an inability to produce red blood cells.

The sites that Eckel found have as high as 10 percent lead by weight in soil. The EPA standard is 0.04 percent in residential areas and 0.1 percent in industrial areas. Some of the sites are in Boston, Buffalo, Chicago, Dallas, Detroit, Houston, Jersey City, Los Angeles, Newark, New York, Philadelphia, Pittsburgh, and San Francisco.



Supplementary Material

Appendix A: Battery Lead Smelters

Appendix B: Babbitt Metal and Solders Smelters

## (State: Tennessee, Region IV)

General Smelting  
& Refining Co.

Nashville

## State: Illinois, Region V

Ablin Bros.	3108 S. Robinson	Chicago	
Bruco Co.	1416 W. 12th	Chicago	
Cohn, L.A. & Bro. Inc.	5429 W. Roosevelt	Chicago	
Eagle-Picher Lead Co.	134 N. LaSalle	Chicago	
Federated Metals Corp.	41st & Wallace	Chicago	
Goldsmith Bros. Smelting & Refining Co.	111 N. Wabash Ave	Chicago	equip
Imperial Type Metal Co	1800 S. 54th Ave.	Chicago	
Loewenthal Metals Corp	947 West Cullerton	Chicago	equip
Michigan Smelting & Refining Co.	410 N. Michigan Av	Chicago	
National Lead Co.	1607 Howard St.	Chicago	
Non-Ferrous Metals Inc.	141 W. Jackson Blvd	Chicago	
Eagle-Picher Co.	--	East St. Louis	
Lewin Metals Div.	Monsanto P.O.	East St. Louis	
ASARCO	--	Federal	
Continental Smelting & Refining Co.	7753 47th	Lyons	

## State: Indiana, Region V)

Magnus Metals Div.	--	Beech Grove	
Eagle-Picher Co.	--	East Chicago	
International Lead Refining Co.	--	East Chicago	
International Smelting & Refining Co.	--	East Chicago	
PB Co.	--	Fort Wayne	
Hammond Lead Products	5231 Hohman	Hammond	equip
Metals Refining Co. Inc.	1723 Summer St.	Hammond	equip

## (State: Michigan, Region V)

Detroit Lead Co.	13535 Helen Ave.	Detroit	
Detroit Lead Pipe Works	7001 Lyndon Ave.	Detroit	
Federated Metals Div.	11030 Russell St.	Detroit	plant
Michigan Smelting & Refining Co.	7885 Jo. Campau Av	Detroit	plant

## State: Minnesota, Region V)

Northwestern Smelting & Refining Co.	1328 N. 2nd	Minneapolis
General Smelting & Refining Co.		St. Paul
National Lead	--	St. Paul
St. Paul Lead Co.	109 E. Chicago Av	St. Paul
St. Paul Smelting & Refining Co.	243 Starkey	St. Paul

## (State: Ohio, Region V)

American Compressed Steel	900 E. Front.	Cincinnati	equip
H & L Metal Co.	3360 E. 79th	Cleveland	
Koblitz-Kohn Co.	2380 Canal Rd.	Cleveland	
Lockport Lead Co.	7700 Bessemer Ave.	Cleveland	
Metals Refining Co.	11001 Madison Ave.	Cleveland	
The Atlas Metal Co.	2651 E. 75th St.	Cleveland	
Tyroler Metals Inc.	5305 Sweeney Ave.	Cleveland	
Edlow Lead Co.	729 Bank	Columbus	

## (State: Wisconsin, Region V)

Allied Smelting Corp.	5116 W. Lincoln Av	Milwaukee
National Lead	808 N. 3rd	Milwaukee

## (State: Louisiana, Region VI)

Dixie Lead Co.	P.O. Box 1775	Baton Rouge
National Lead	--	New Orleans

## (State: Texas, Region VI)

Cedergren Metals	P.O. Box 5562	Dallas
Commercial Metals Co.	512 S. Akard	Dallas
Commercial Metals Co.	Latimer at Corinth	Dallas
National Lead	959 Terminal	Dallas
Gashman Metals Co.	2600 Shamrock	Fort Worth
East Texas Lead Co.	P.O. Box 1032	Henderson
Gulf Coast Lead	--	Houston
Wilkinson Bros. Smelting	1120 Ursula	Laredo
Brunner Co.	1913 S. Flores	San Antonio
Trottner Iron & Metal	1105 S. Medina	San Antonio
Lipshitz Smelting & Refining Works	101 Franklin	Waco

## Appendix B

"Babbitt and Solder Manufacturers" sites Unknown to Federal and  
State Authorities

<u>Site</u>	<u>Address</u>	<u>City</u>	<u>MSR</u>
(State: Connecticut, Region I)			
David C. Sanford Co.	39 Drouve	Bridgeport	
Hamden Smelting Co. Inc.	30 Edmund St	Hamden	plant
Lapides Metal Corp.	322 Legion Ave	New Haven	equip
Surf Metal Co.	240 Great Meadow Rd	Stratford	
(State: Massachusetts, Region I)			
Eastern Smelting & Refining Corp.	109 W. Brookline St	Boston	
General Metals & Smelting Co.	47 Burnham	Boston	
Harcon Corp.	523 Dorchester Ave	Boston	
Shawmut Smelting Co.	455 Columbia	Cambridge	
Charlestown Smelting Co.	235 Medford	Charlestown	
Harcon Corp.	105 5th St.	Chelsea	
Vulcan Smelting Works	115 Fifth	Chelsea	
Nick, Herman, & Co. Inc.	140 Granite Ave.	Dorchester	
Massachusetts Smelting & Refining Co.	257 3rd	E. Cambridge	
Acme Smelting Co. of Mass.	413 2nd	Everett	
Acorn Type Foundry	273 Lee Burbank Hwy	Revere	equip
Nick, Herman, Co., Inc.	135 Linwood St.	Somerville	
Brackett, Henry F. & Co.	587 E. 1st	South Boston	
Coran Bros. Corp.	509 E. 2nd	South Boston	
(State: Rhode Island, Region I)			
Union Smelting & Refining Works	358 Public St.	Providence	
Union Smelting & Refining Works	604 S. Main St.	Providence	
(State: New Jersey, Region II)			
Wolf, Jacques & Co.	350 Lexington Ave.	Clifton	
New Jersey Metals Co.	712 Rockefeller	Elizabeth	
Jackson Metal Co.	508 5th St.	Hoboken	
Jackson Metal Co.	501 Jackson	Hoboken	equip

(State: Virginia, Region III)

Glazier Metal Co. 21st & Hull Sts. Richmond

(State: Alabama, Region

Birmingham Lead  
& Smelting Co. Pinson Rd. Birmingham

(State: Florida, Region

Tampa Lead Industries 5217 E. Broadway Av Tampa

(State: Kentucky, Region IV)

Precision Metals Co.	131 N. 10th	Louisville	
Certified Metals Mfg Co.	534 W. 12th	Newport	equip
Certified Metals Mfg Co.	12th & Licking Pike	Newport	

(State: North Carolina Region IV)

Southern Metals Co. Inc.	1035 W. Morehead	Charlotte	
Southern Metals Co. Inc.	1023 W. Palmer	Charlotte	
Industrial Metals Alloy Co.	20 E. Arcadia Ave.	Winston-Salem	plant

(State: Tennessee, Region IV)

Cline & Bernheim 810 N. 17th Ave. N Nashville

(State: Illinois, Region V)

Eagle-Picher	--	Argo	
Aurora Refining Co.	--	Aurora	equip
Federated Metals Div.	--	Beckemeyer	equip
A.W. Cadman Mfg. Co.	431 S. Dearborn	Chicago	
Ablin Bros. Scrap Metals	3450 S. LaSalle	Chicago	
Ace Metal Co.	4500 W. Fillmore	Chicago	
Allied Metal Co.	1111 W. Liberty St.	Chicago	
American Metal Co.			
of Illinois, Ltd.	1 N. LaSalle	Chicago	
Ames Metal Products Co.	1840 W. 33rd	Chicago	
Braman, Chas. & Sons	2046 W. Carroll Av	Chicago	
Century Smelting & Refining Corp.	2135 S. Loomis	Chicago	
Chicago Smelting & Refining Corp.	3701 S. Kedzie Ave.	Chicago	equip
Cohn, H. & Sons	4528 W. Division St.	Chicago	
Cooke, Miller, Yoelin	2635 W. Taylor St.	Chicago	

Delta Metals Inc.	1440 S. Talman	Chicago	
Division Lead Co.	836 W. Kinzie St.	Chicago	equip
Elesco Smelting Corp.	1240 W. Carroll Av	Chicago	
Elesco Smelting Corp.	3401 S. Lawndale Av	Chicago	equip
Elesco Smelting Corp.	1144 W. 14th Pl.	Chicago	
Ellis Metal Co.	2031 W. Churchill St	Chicago	
E.A. Berkson Metal Co.	1130 W. Wisconsin St	Chicago	
E.A. Berkson Metal Co.	1500 Wabansia	Chicago	
Imperial Smelting Corp.	4442 W. Fillmore St	Chicago	
International Smelting & Refining Co.	20 N. Wacker Dr.	Chicago	
Interstate Smelting & Refining Co.	332 S. Michigan	Chicago	
J. Berkson & Sons Metal Co.	2239 S. Union Ave.	Chicago	
Kester Solder Co.	4201 Wrightwood Av	Chicago	
L.D. Allen Metal Works	6932 S. Clyde	Chicago	
Lake Calumet Smelting.	11901 S. Champlain	Chicago	
Lincoln Smelting & Refining Co.	5811 W. 66th St.	Chicago	
Metals Recovery Co.	2026 W. Carroll Av	Chicago	
Miller Yoelin Co.	1925 N. Mendell	Chicago	
National Metal Co.	1724 W. Lake	Chicago	
North Branch Metal Products Inc.	3388 N. Avondale	Chicago	
Seaway Metals Refining Corp.	3307 S. Lawndale Av	Chicago	
Seligman, M., Co.	1951 Clybourn Ave.	Chicago	
Silverstein & Pinsof	1720 Elston Ave.	Chicago	equip
Smith & Robinson	1764 W. Highland	Chicago	
Smith & Robinson	420 Orleans	Chicago	
United Refining & Smelting	2920 W. Carroll Av	Chicago	
United Refining & Smelting Co.	3350 Franklin Blvd.	Chicago	
Western Metal Co.	3201 S. Kedzie Ave.	Chicago	equip
Hi Grade Alloys Corp.	3034 E. 59th	Chicago	
Shanfeld, E.			
Metal Products	1530 Converse Ave.	East St. Louis	
Saxon Metal Co.	17730 Chicago Ave.	Lansing	
Superior Metal Reclaiming	--	Lansing	
Dalkoff Metals	9th & 1st Ave.	Rock Island	

(State: Indiana, Region V)

Inland Metals Refining	3601 Canal St.	East Chicago	equip
U.S. Reduction Co.	Melville & Chicago Ave.	East Chicago	equip
Wabash Smelting Co.	1509 McKinley Ave.	Fort Wayne	

Maynard Metals Co. Inc.	P.O.Box 1101	Hammond
Metals Supply Service	6020 Hump Rd.	Hammond
Eraman, Chas. & Sons	P.O. Box 547	Plymouth
Max Schneider Co.	2606 W. Sample	South Bend

## (State: Michigan, Region V)

Mindel, M. & Sons	319 8th St.	Benton Harbor	
Acme Metal Co.	1436 Holbrook St.	Detroit	
Aetna Smelting & Refining Co.	1826 Illinois	Detroit	
City Metals Refining Co.	2945 Hubbard	Detroit	equip
Continental Metal Co.	11500 Russell	Detroit	
Federal Alloys Corp.	924 Leland	Detroit	
Great Lakes Smelting Co.	1640 E. Euclid Ave.	Detroit	
Industrial Smelting Co.	19430 Mt. Elliott	Detroit	
Motex Metal Process Corp.	4473 W. Jefferson	Detroit	
Standard Metals Co.	1560 Franklin St.	Detroit	
Wolverine White Metal Co.	3421 Gibson	Detroit	

## (State: Minnesota, Region V)

Metals Refining Co.	218 3rd Ave. N	Minneapolis
Northwestern Smelting & Refining Co.	2523 Hiawatha Ave.	Minneapolis

## (State: Ohio, Region V)

Certified Metals Mfg. Co.	1940 River Rd.	Cincinnati	
G.A. Avril Co.	Este Ave. & B&O RR	Cincinnati	equip
Moskowitz Bros.	Budd & Harriet Sts.	Cincinnati	
Gibson & Price Co.	1213 W. 3rd	Cleveland	
Mowery MetalCo.	6950 Kinsman Rd.	Cleveland	
North American Smelting	572 Juneway Dr.	Cleveland	
Columbus Metal Co.	459 Parsons Ave.	Columbus	
Columbus MetalCo.	2505 Groveport Pike	Columbus	
Linver-Kripke Div.	628 S. 15th	Toledo	

## (State: Wisconsin, Region V)

Cassel, A.A., Metal Co.	518 N. 20th	Milwaukee
Cream City Smelting Works	2726 W. Evergreen Ln	Milwaukee
Crown Metal Co.	117-21 E. Washington	Milwaukee
Jacob Bros. White Metal	538 S. 2nd	Milwaukee
Locher, R.E. & Shefrin	1120 S. Barclay	Milwaukee
Schiffman, Hy, Co.	1428 W. Pierce	Milwaukee

## (State: Texas, Region VI)

Western Lead Inc.	290 N. Osage	Amarillo
American Smelting & Refining Works	4801 S. Lamar	Dallas
Grant & Tunnell Co.	Sargeant Rd.	Dallas
Atlas Smelting & Refining Co.	6800 Brewster	Houston
Eagle-Picher Co.	1121 Rothwell	Houston
Murdock Lead Products	1209 Hutchins	Houston
Wilkinson Bros. Smelting	2320 St. Rita	Laredo

## (State: Missouri, Region VII)

Shostak Metal Corp.	303 Broadway	Kansas City	
American Lead Products	2939 Chouteau Ave.	St. Louis	
Frictionless Metal Co.	1458 Collins	St. Louis	equip
Holtzman, M., Metal Co.	5223 McKissock Ave.	St. Louis	equip
Shanfeld Bros. Metal Co.	56-70 Dock St.	St. Louis	

## (State: Colorado, Region VIII)

National Smelting & Refining Co.	1351 13th	Denver
----------------------------------	-----------	--------

## (State: Utah, Region VIII)

Lake Metals Co.	1520 Pioneer Rd.	Salt Lake City
Utah Metal Works	1155 Hays Ave.	Salt Lake City

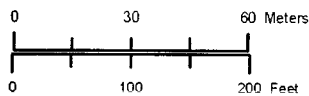
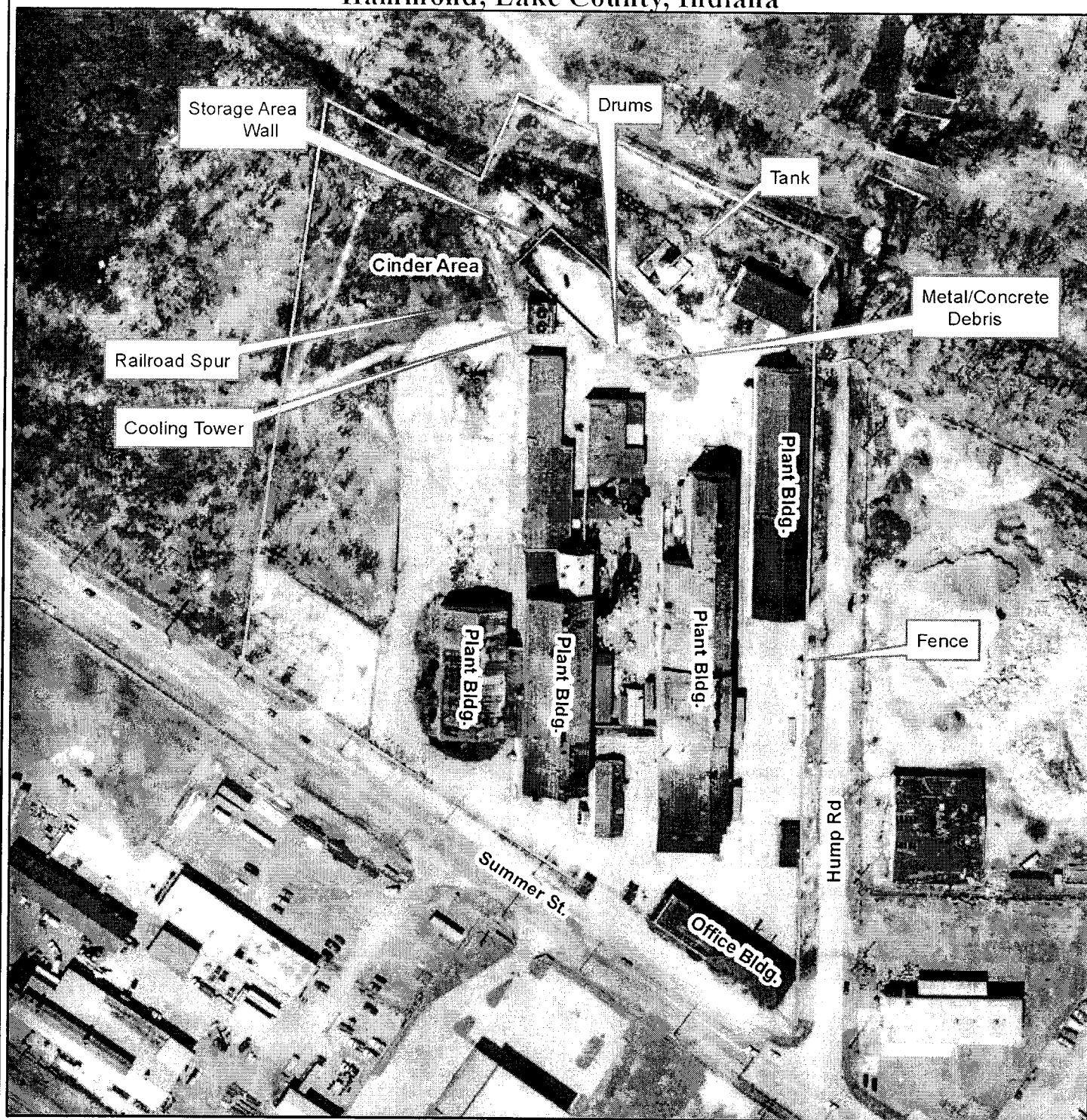
## (State: California, Region IX)

Cook Metal Co.	5752 Joanne Pl.	Culver City
Kramer, H. & Co.	631 S. Aviation Blvd	El Segundo
Goldberg Metal Refining	14700 S. Avalon	Gardena
Sonken-Galamba Corp.	1439 W. 178th	Gardena
J. Chersky & Sons	441 W. Florence Av	Inglewood
Ben Chersky & Sons	3500 Emery	Los Angeles
California By-Products	5717 S. District Bl	Los Angeles



## ATTACHMENT C

# Site Features Map, Metals Refining Hammond, Lake County, Indiana



Sources:  
Non Orthophotography Data  
- Obtained from the State of Indiana Geographic Information Office Library

Orthophotography - Obtained from IndianaMap Framework Data  
(www.indianamap.org)  
Map Projection: UTM Zone 16 N Map Datum: NAD83

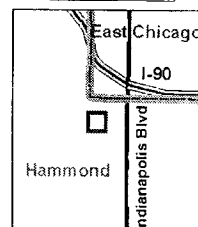


This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

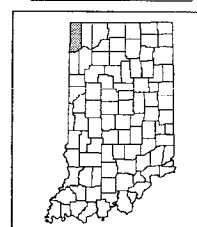
Mapped By: Barry Steward, Office of Land Quality  
Date: 8/2/2011



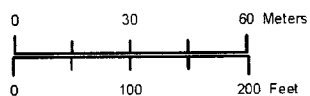
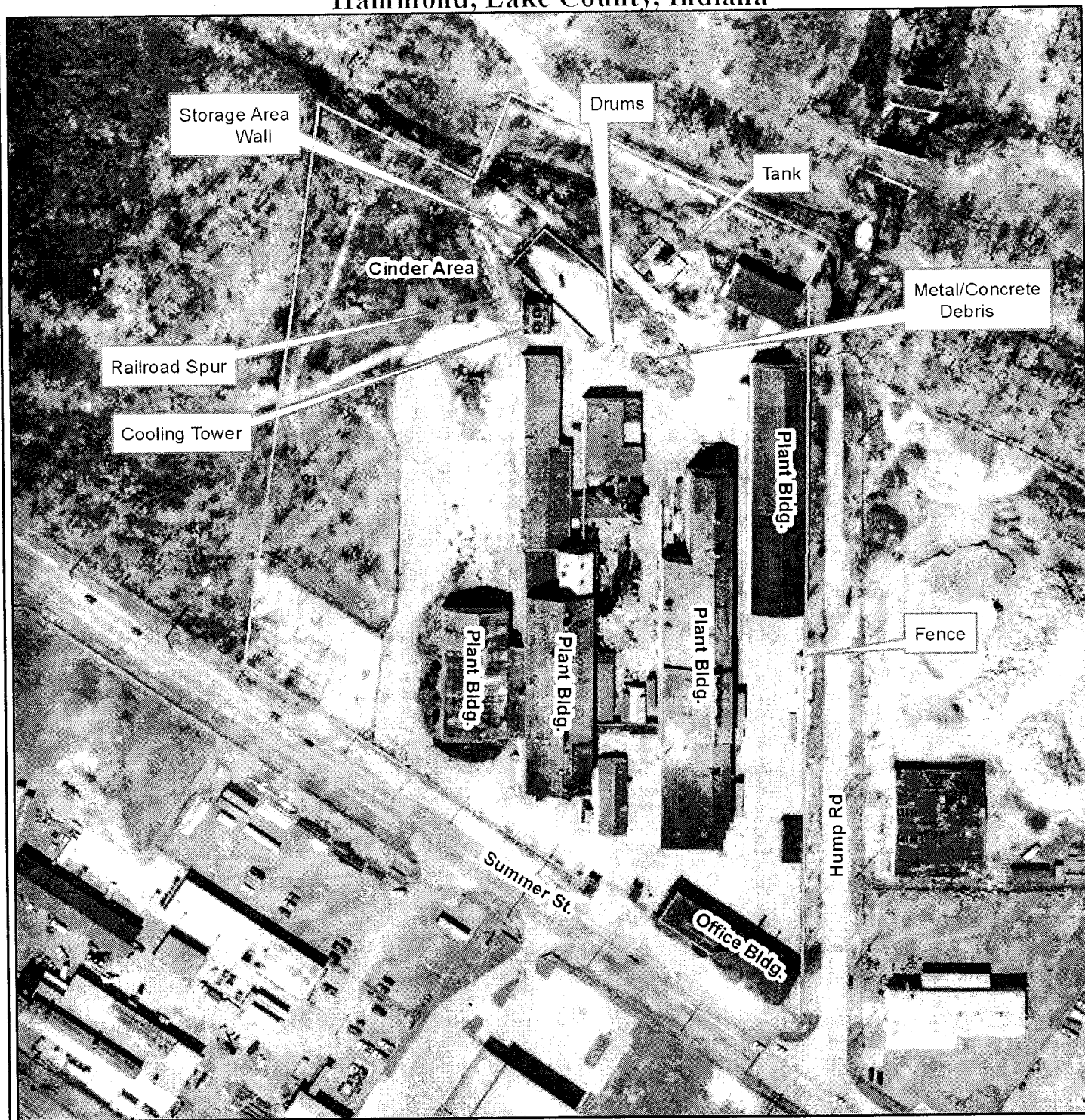
Site Vicinity



Lake County, IN



# Site Features Map, Metals Refining Hammond, Lake County, Indiana



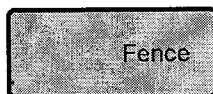
**Sources:**  
**Non Orthophotography Data**  
 - Obtained from the State of Indiana Geographic Information Office Library

**Orthophotography** - Obtained from IndianaMap Framework Data  
 (www.indianamap.org)  
**Map Projection:** UTM Zone 16 N **Map Datum:** NAD83

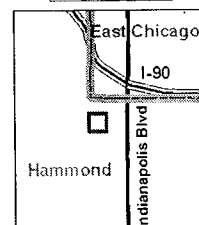


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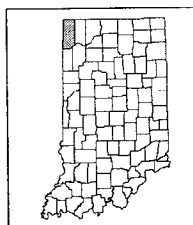
**Mapped By:** Barry Steward, Office of Land Quality  
**Date:** 3/2/2011



Site Vicinity

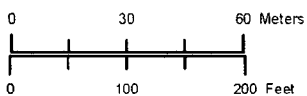
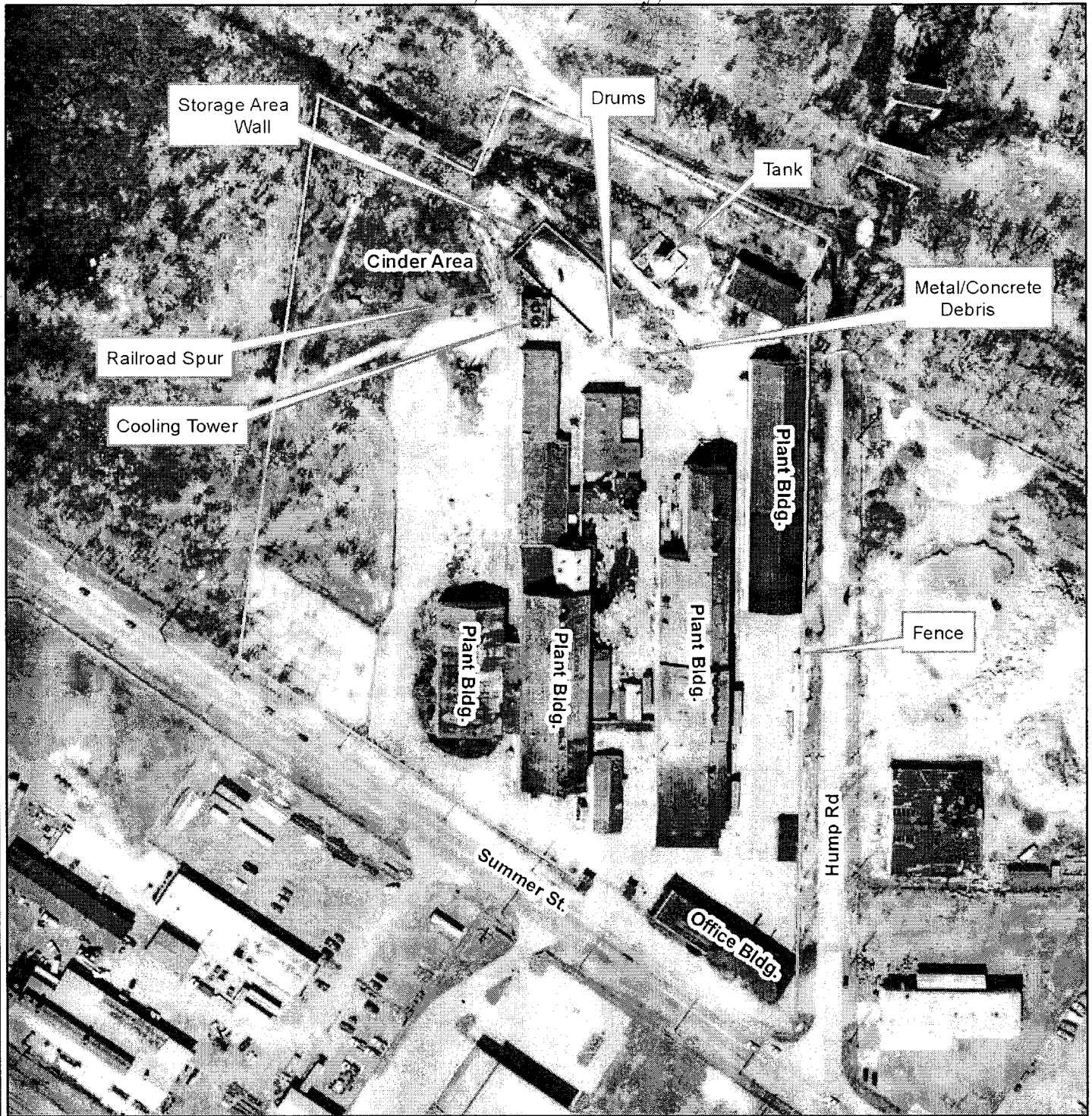


Lake County, IN





# Site Features Map, Metals Refining Hammond, Lake County, Indiana



**Sources:**  
**Non Orthophotography Data**  
 - Obtained from the State of Indiana Geographic Information Office Library

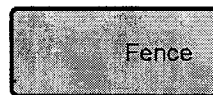
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**Map Projection:** UTM Zone 16 N **Map Datum:** NAD83

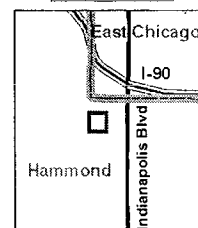


This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

**Mapped By:** Barry Steward, Office of Land Quality  
**Date:** 8/2/2011



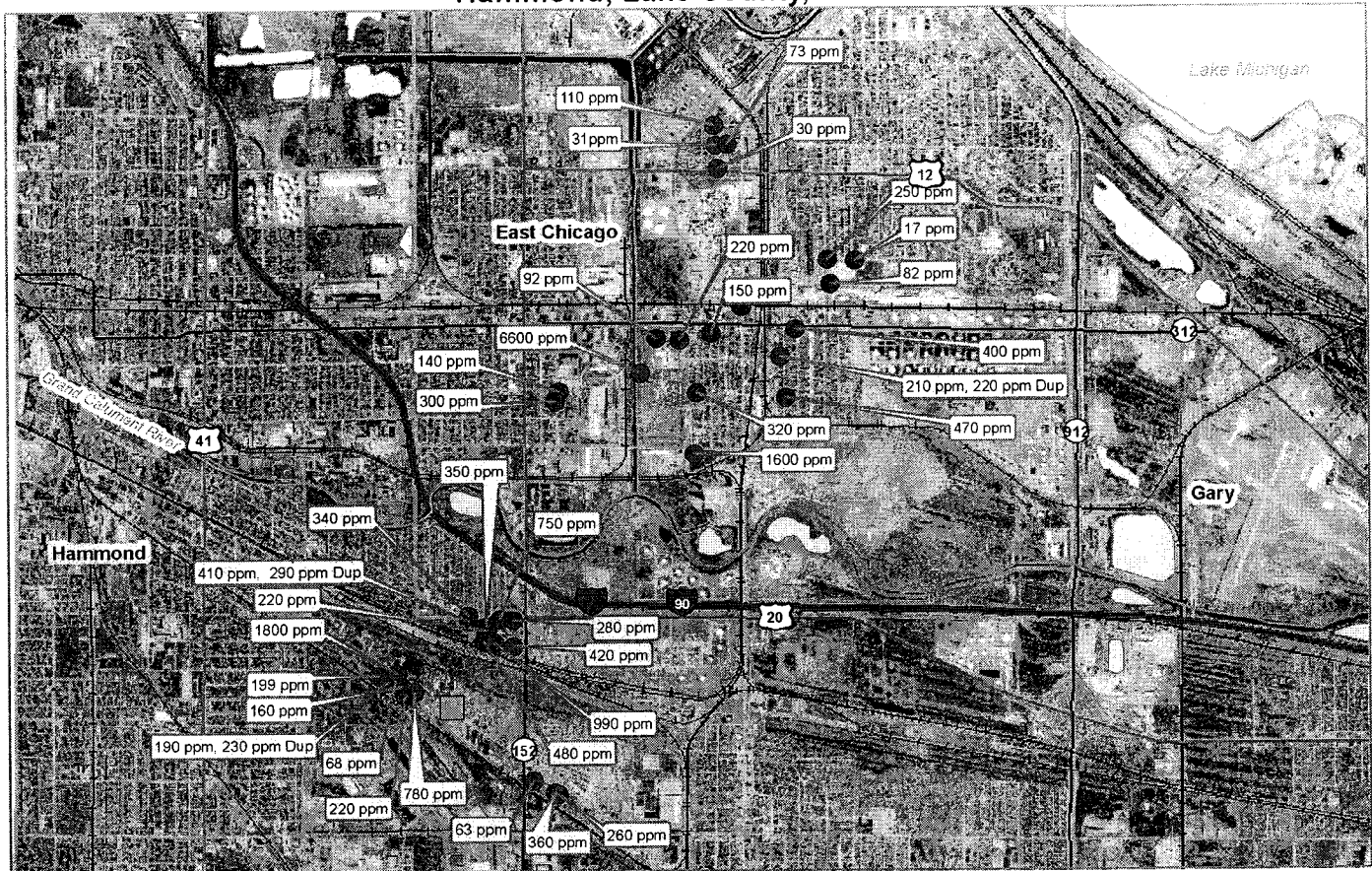
Site Vicinity



Lake County, IN

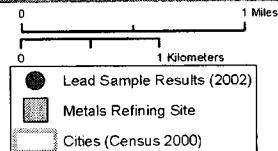


# Lead Sample Results (2002) - Metals Refining Hammond, Lake County, Indiana



This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

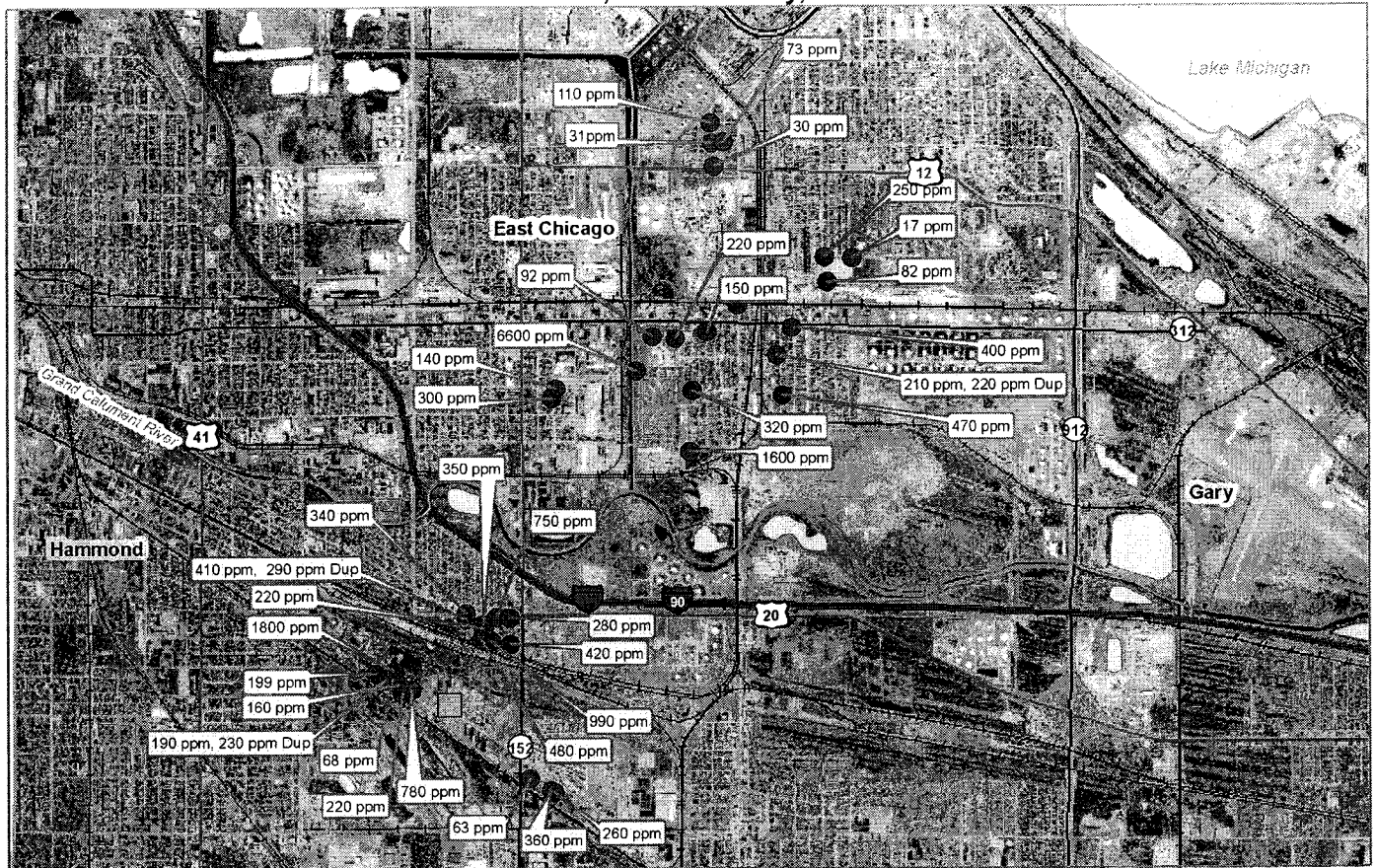
Mapped By: Lorraine Wright, Office of Land Quality  
Date: January 14, 2010



**Sources:**  
**Non-Orthophotography Data:** Obtained from the State of Indiana Geographic Information Office Library. Sample locations and concentration values were digitized by Mark Jaworski, IDEM. Mark extracted the results from the EPA Central Regional Laboratory sample results.  
**Orthophotography:** Obtained from Indiana Map Framework Data, 2005 Aerial ([www.indiana.map.org](http://www.indiana.map.org))  
**Map Projection:** UTM Zone 16 N **Map Datum:** NAD83

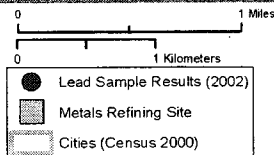
## ATTACHMENT E

# Lead Sample Results (2002) - Metals Refining Hammond, Lake County, Indiana



This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

Mapped By: Lorraine Wright, Office of Land Quality  
Date: January 14, 2010



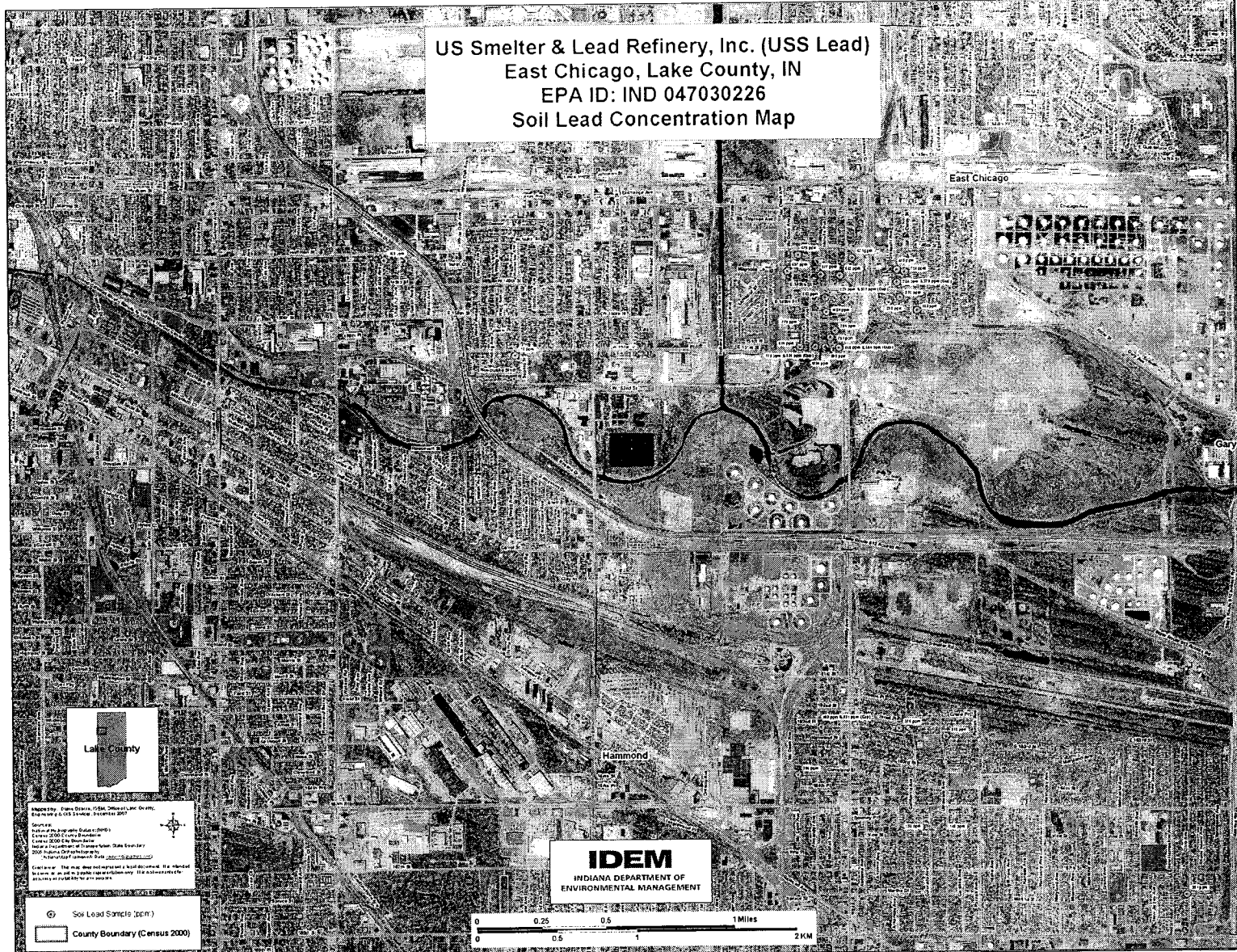
Sources:  
Non-Orthophotography  
Data - Obtained from the State of Indiana  
Geographic Information Office Library. Sample locations and  
concentration values were digitized by Mark Jaworski, IDEM.  
Mark extracted the results from the EPA Central Regional  
Laboratory sample results.

Orthophotography - Obtained from Indiana Map Framework  
Data, 2005 Aerial ([www.indianamap.org](http://www.indianamap.org))  
Map Projection: UTM Zone 16 N Map Datum: NAD83

## ATTACHMENT E



US Smelter & Lead Refinery, Inc. (USS Lead)  
East Chicago, Lake County, IN  
EPA ID: IND 047030226  
Soil Lead Concentration Map



## ATTACHMENT F

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

U.S. SMELTER AND LEAD REFINERY, INC.

BACKGROUND SAMPLE LOCATION REPORT

EAST CHICAGO, INDIANA

LAKE COUNTY

U.S. EPA ID: IND047030226

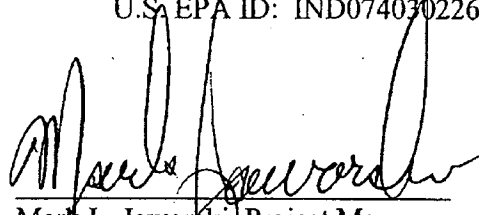
AUGUST 3, 2007

Reference #75

001

Signature Page  
for  
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Background Sample Location Report  
East Chicago, Indiana  
Lake County  
U.S. EPA ID: IND074030226

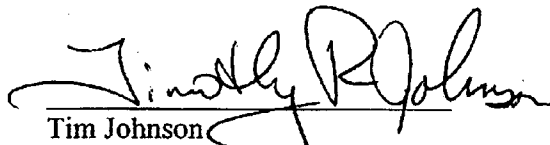
Prepared By:



Mark L. Jaworski, Project Manager  
Site Investigation Section  
Indiana Department of Environmental Management

Date: 8-3-07

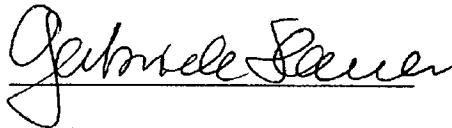
Reviewed By:



Tim Johnson  
Site Investigation Section  
Indiana Department of Environmental Management

Date: 8-6/07

Approved By:



Gabriele Hauer, Chief  
Site Investigation Section  
Indiana Department of Environmental Management

Date: 8-6-07

Approved By:

\_\_\_\_\_  
U.S. EPA Site Assessment Manager

Date: \_\_\_\_\_

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E. Soil Survey of Lake County, Indiana . . . . .	E-1
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## **1.0 Introduction**

The U.S. EPA RCRA and Removal programs sampled residential areas located north and northeast of U.S. Smelter and Lead Refinery, Inc. (USS Lead). Elevated levels of lead were detected in the soil samples (Appendix A). Under a cooperative agreement between U.S. EPA and the Indiana Department of Environmental Management (IDEM), U.S. EPA Region V has requested that the Site Investigation Section of IDEM evaluate and assess the potential background soil sample locations near the USS Lead facility located in East Chicago, Indiana. The purpose of this investigation is to research and identify potential background sample locations for USS Lead.

## **2.0 U.S. EPA Guidance**

U.S. EPA uses the Hazard Ranking System (HRS) (40 CFR Part 300, App. A) to evaluate Superfund sites to be proposed on the National Priorities List (NPL). Based on the HRS, an observed release or observed contamination is established when hazardous substances are documented three times or more above the background concentration in ground water, soil, surface water, or air. U.S. EPA has published a quick reference fact sheet for Establishing Background Levels (EBL). A copy of this fact sheet is found in Appendix B. For soil background samples, the fact sheet states "In some cases, published background levels may exist that can be applied to a specific site." The EBL fact sheet states that the location, depth, and appearance of all soil samples should be carefully documented. The samples should have similar texture, color, and grain size (OSWER Directive 9345.1-05). The fact sheet also states that background sample locations that are subject to airborne contamination from the site or other sources should be avoided

(OSWER Directives 9345.1-05 and 9345.1-07). Refer to the fact sheet found in Appendix B for more information.

### **3.0 Wind Information/Predicted Concentration Deposition**

As part of a power point presentation, U.S. EPA provided to Site Investigation staff a wind speed flow vector diagram and a Predicted Concentration diagram (Appendix C). The wind diagram was based on wind observations from the Gary Chicago International Airport, Indiana. The diagram depicts that the greatest deposition of wind blown material would be north, northeast, east, south, and possibly south southwest of the USS Lead facility. The Predicted Concentration diagram illustrates the average annual lead deposition ( $\text{g/m}^2$ ) per distance from a source.

### **4.0 Published Information**

Site Investigation staff reviewed published data regarding metal concentrations in native soils throughout the United States. According to EPA, 1983, Hazardous Waste Land Treatment, EPA SW-874, Municipal Environmental Research Laboratory, Cincinnati, Ohio, the average concentration of lead naturally occurring in soils ranges from 0-200 ppm. Refer to Appendix D for a copy of this document.

### **5.0 Soil Types**

To meet other EPA soil background requirements, a review of the Soil Survey of Lake County (Appendix E) was conducted. The soil survey revealed that the majority of the surrounding soils and the proposed background samples listed below are classified as



Urban Land (Ur). Some small areas, found on and around the USS Lead property are classified as the Oakville (OkB), Tawas (TA), and Carlisle (Ca) soil series. All proposed background soil samples in this area are of the Oakville-Tawas association.

#### **6.0 Proposed Background Soil Sample Locations**

Site Investigation staff initially chose 17 areas that would potentially be considered background soil areas. Refer to the Background Sample Location Map, Appendix F. The locations were chosen in areas upwind to the directions depicted in U.S. EPA's wind diagram. The soils chosen in these areas should be the same soil type as the elevated lead samples collected by EPA located north and northeast of USS Lead. The locations also were chosen in areas where access would be easily obtained (i.e. city parks, school athletic fields, and some residential areas).

#### **7.0 Historical Aerial Photograph Review**

As part of this investigation, Site Investigation staff reviewed historical aerial photographs of the areas of the proposed background sample locations mentioned in Section 6.0 above. The photographs were taken by the State of Indiana in 1938, 1939, 1958, 1965, 1973, and 2007. These photographs are located in the State Historical Archives building in Indianapolis. The photographs were reviewed to insure that the background sample areas were outside the area believed to be influenced by the USS Lead facility. Appendix G of this report depicts the findings of the historical aerial photo review. The specific aerial plate number and the dates the photographs were taken are also provided. A present day, 2006/2007, close up aerial photo map of each of these areas is found in

## Appendix H.

The following observations were made when reviewing the aerial photographs:

- Background sample locations #1, #2, #4, #8, #9, and #14--- These areas have been a park type setting since at least October 31, 1938.
- Background sample locations #3, #5, #11, and #12--- These areas were originally undisturbed dune and swale areas. Since the 1950's, schools and associated athletic fields have been predominantly the only use on these properties.
- Background sample location #6--- Since 1938, the area had been undisturbed dune and swale. It had been graded and undeveloped since 1965.
- Background sample location #7, #10, and # 15--- Areas #7 and #15 have essentially been residential areas since at least 1965. Area #10 had been residential since 1938. However, in 1973, photographs indicate that the majority of the houses in area #10 were no longer present. The area is currently a ball diamond.
- Background sample location #13---This area was graded in 1938. Although a couple of unknown structures were built from 1938 to 1965, it appears that no residential/industrial type of activity occurred.
- Background sample location #16--- It is questionable in the 1938 aerial photograph whether this area was impacted by steel mill activity. From 1958 to present, the area had been a trailer park.
- Background sample location #17---Aerial photographs from 1938 to present suggest that this area had always been a cemetery.

### 8.0 Other Potential Sources – A Sanborn Insurance Map/Aerial Photo Review

Site Investigation staff also conducted a brief review of files and Sanborn Maps to determine if there are any other potential sources of lead that may have also impacted the surrounding soils. The review revealed the presence of at least seven other facilities that were involved with metal processing activities in the past. The facilities are Anaconda, International Lead, Eagle Picher, Metals Refining, U.S. Reduction, Metals Thermit Corporation, and Hammond Lead. Note that USS Lead and the Dupont Company are not discussed in this report. A map showing the location of these other facilities is

found in Appendix I. The layout of these facilities was reviewed on 1930 Sanborn Insurance maps. Copies of the Sanborn maps showing some of these facilities are found in Appendix J. Below are brief findings regarding these facilities.

#### The Glidden Co.; Metals Refining, Inc. Division

Sanborn maps show that Metals Refining, Inc. recycled lead at the site in 1930. The maps indicate that an oxidizing plant and a refinery had operated at this site. A metal powder blending area, an iron powder facility, and other processes were utilized. . Historical research indicated that lead smelting has occurred at the site.

#### United States Reduction (U.S. Reduction)

According to 1930 Sanborn maps, U.S. Reduction was a manufacturer of white metal. The facility consisted of an evaporating building, ore storage areas, an oil tank room, ingot storage, a machine shop, a melting area, other metal storage buildings, and an ore mill. No other historical information was found.

#### Anaconda Lead /International Lead Products

According to 1930 Sanborn maps, International Lead Products along with Anaconda Lead, was a manufacturer of white lead and zinc oxide. Sanborn maps do not show a boundary line between the two facilities. The facilities consist of a pulverizing mill, white lead storage areas, an electrical substation, a lowden drier building, several water towers, an electrolytic building consisting of a tank room and a cell room, a chemical laboratory, a machine shop, a zinc oxide experimental unit building, a furnace, several settlers, a motor room, offices, and other miscellaneous buildings and processing areas. No other historical information was found.

#### Metals Thermit Corporation

The Metal Thermit Corporation operated a detinning plant. The facility consisted of a smelter, a general laboratory, a raw materials room, a general repair shop, an engine room, offices, and other miscellaneous buildings and processing areas.

#### Hammond Lead and Eagle Picher

No historical information was found for these facilities at this time.

### **9.0 Historical Aerial Photographs of Potential Sources**

Historical aerial photos of the above mentioned facilities were reviewed. Appendix K of this report depicts the findings of this historical aerial photo review. The specific

aerial plate number and the dates the photographs were taken are also provided in the appendix.

The aerial photographs confirm the presence of the Anaconda/International Lead Products plant buildings from October 31, 1938 through July 17, 1965. The September 12, 1958 indicates that Anaconda's activities expanded further north toward their northern property line. The September 6, 1973 photographs reveal that an apartment complex had been fully constructed on the former Anaconda property. This apartment complex is present today.

Aerial photographs from October 31, 1938 through present show that the Metal Thermit Corporation and the Metal Refining plant buildings are present on their individual properties.

The Hammond Lead facility was not present on site according to the October 31, 1938 photographs. The facility is present on site on September 12, 1958. The plant building still stands today.

#### **10.0 Past IDEM Activities**

In early 2001, EPA, provided the Site Investigation Section with a list of former lead smelting factories that were identified by William Eckel in a study published in the American Public Health Journal as not having previously been listed by U.S. EPA or by local health departments. The facilities were located throughout the state. In response to this information, the Site Investigation Section collected numerous soil samples in the surrounding area of these facilities. The sampling was conducted as part of Pre-CERCLIS Screening activities for these sites. The samples were sent to Region V's Central Regional

Laboratory in Chicago, Illinois for lead analysis. A map showing the sample locations along with the sample lead results for the East Chicago area sites is found in Appendix L.

Analysis of the soil samples collected for these Pre-CERCLIS screenings, revealed lead concentrations ranging between 30 ppm to as high as 6600 ppm. The 6600 ppm lead concentration was obtained just east of the canal, on the current apartment property; near the very southern boundary of Carrie Grosch School. Historically, as addressed in Section 8 and in Appendix J, this area was formerly Anaconda and/or International Lead Products. These facilities had operated a lead refinery. Aerial photos show that these two facilities occupied this tract of land from at least 1938 to 1965. The high concentration of lead may indicate a source area.

#### **11.0 IDEM and EPA Data Base Search**

In addition to the historical research regarding proposed background samples, staff plotted current active permitted Solid Waste sites, IDEM Commissioner Bulletin sites, RCRA Corrective Action sites, Industrial Waste sites, State Clean Up sites, Restricted Waste sites, Superfund sites, Treatment Storage Disposal (TSD) sites, and Voluntary Remedial Program sites within the surrounding proposed background sample areas. The facilities plotted include only those sites that have GPS location coordinates. A map showing these facilities (that have GPS coordinates) are found in Appendix M. These facilities were plotted to determine if any activities from these facilities could also potentially impact the proposed background samples. A review of these facilities, their lead usage, and/or lead releases are found in Appendix M. Limited information was available in IDEM's data base regarding the usage or releases of lead from these facilities.

## **12.0 Site Visit**

On August 7, 2007, Site Investigation staff conducted an on-site visit at all of the proposed background sample locations and the potential other former lead facilities.

The site visit determined that historical land uses as depicted on past aerial photographs matches current site conditions at the proposed background locations.

Staff noted that remnants of small groves of black oaks, common to the area prior to any disturbances, are still present in some parks and current school athletic fields.

Staff also noted that numerous businesses and other industries surround the residential, school, and park areas. Some business are not noted in IDEM's/EPA's.

New businesses appear to have moved into plant buildings that were used by other former industries.

## **13.0 Summary, Conclusions, and Recommendations**

U.S. EPA had requested the Site Investigation Section of IDEM to evaluate and assess the potential background soil sample locations for the USS Lead facility located in East Chicago, Indiana. Site Investigation (SI) staff conducted a brief historical review of the area. Site Investigation staff proposed 17 locations that could establish background for the USS Lead facility.

Site Investigation staff found from a US EPA published document that the lead concentrations in native soils range between 0 and 200 ppm. Winds from the north, south, and west appear to be the predominant prevailing winds.

A review of historical aerial photographs suggests that the proposed 17 areas have had the same land use for the past 20 to 60 years. These areas should establish potential background locations for the USS Lead facility. However, a review of Sanborn Insurance Maps and IDEM files indicate that other facilities in the immediate surrounding area of USS Lead were engaged in lead processing activities (i.e. Anaconda, International Lead, Hammond Lead, Metals Refining, US Reduction, Metals Thermit Corporation, Eagle Picher, and other active/inactive facilities currently addressed in IDEM programs).

In 2002, IDEM had conducted several Pre-CERCLIS Screenings for some abandoned lead facilities in the area. Analysis of samples collected for those screenings revealed a lead concentration as high as 6600 ppm. The sample was located at the northern boundary of an apartment complex area. According to Sanborn insurance maps and current aerial photos, the entire apartment complex area now sits on top of what had historically been occupied by Anaconda Lead and International Lead Products. The Sanborn maps indicate that these facilities operated a lead refinery. Aerial photos show that these two facilities occupied this tract of land from at least 1938 to 1965. Since the highly elevated concentration of lead may indicate a source area, staff recommends that a Pre-CERCLIS Screening be conducted for the International Lead Products/Anaconda Lead site(s) for possible inclusion into CERCLIS.

Proposed background samples #3, #5 through #17 appear to be appropriate background soil samples. Sample areas #1, #2, and #4, and possibly #8 may not be representative background locations because of the potential for these locations to have been mildly impacted by the former facilities (Refer to Appendix C, page 2, Predicted Concentration diagram and Appendix I, Map Showing Location of other Facilities). These three (possibly 4) locations may need to be moved outside of the predicted concentration

area.

During a site visit of the area, the industries located immediately north of sample area #17, a cemetery, were found not to be engage in any lead processing activities. Background Sample Area #17 may be especially appropriate to obtain background samples because the last time of any localized soil disturbance can be documented by noting the burial date found on a tombstone.

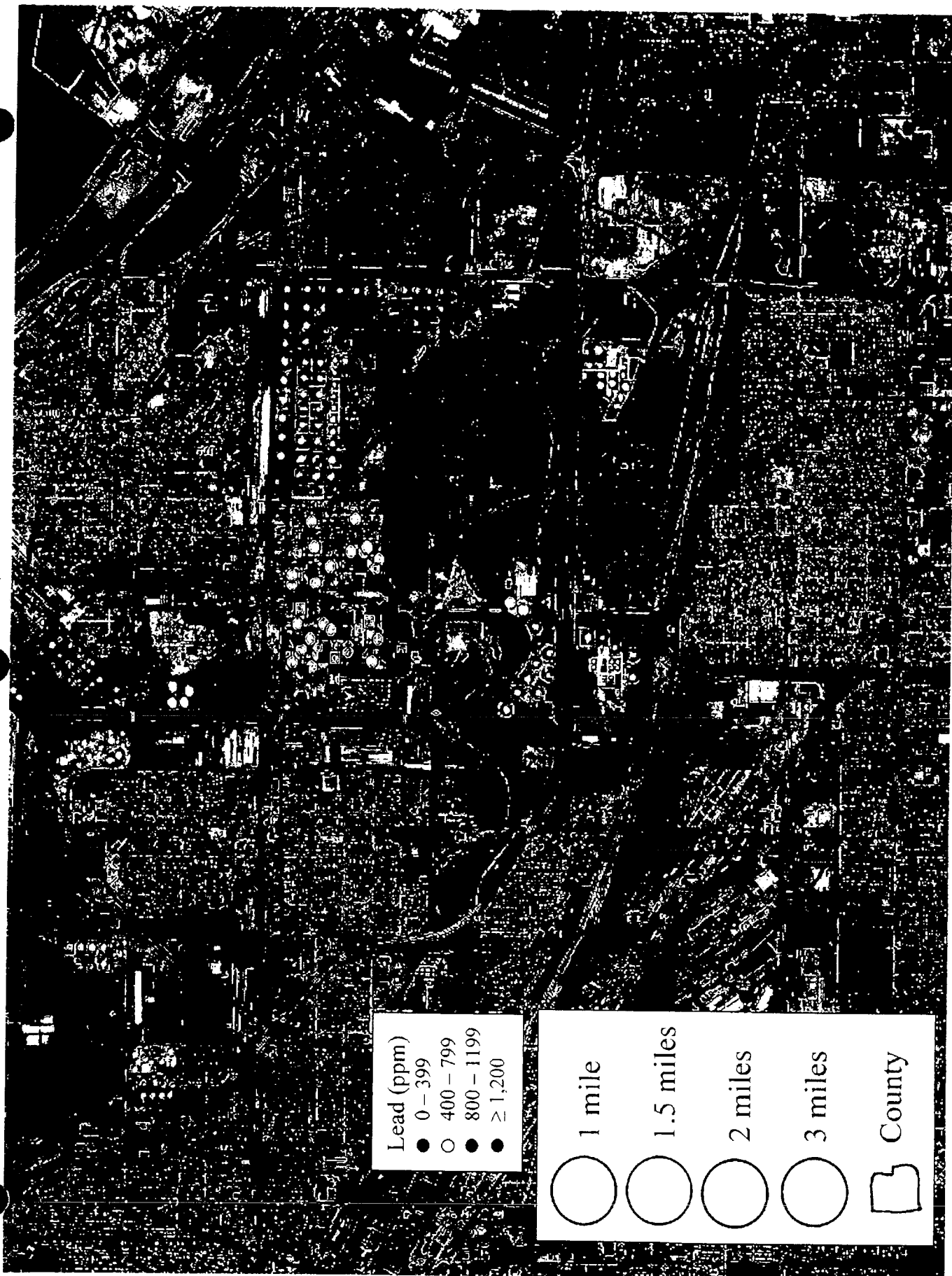
It is important that the color, texture, type, and grain size of all background soil samples be carefully noted so that the background samples can be compared to observed release samples to document an observed release per the HRS rule. All samples should be collected in relatively the same time period. Due to the fact that historical research has revealed other potential sources of lead, specifically Anaconda Lead/International Lead Products and other nearby lead processing facilities, background soil samples should be obtained in accordance with U.S. EPA background guidance. In addition, an effort should be made to better determine the source(s) of the lead contaminated residential soils.

All facilities that are currently being addressed by IDEM programs, as depicted on the Surrounding IDEM Facilities Map, should be reviewed to insure that the proposed background samples are not impacted by lead.



Appendix A

Map Showing Elevated Levels in Residential Yards



Appendix B

EPA Fact Sheet for Establishing Background Samples



## Establishing Background Levels

Office of Emergency and Remedial Response

Quick Reference Fact Sheet

### Abstract

EPA uses the Hazard Ranking System (HRS) (40 CFR Part 300, App. A) to evaluate Superfund sites to be proposed on the National Priorities List (NPL). Based on the HRS, an observed release or observed contamination is established when contaminants that are significantly above background levels have migrated away from a site through environmental media. This fact sheet describes how to determine background levels for each migration pathway, and emphasizes the necessity of strategic, efficient sampling, which is particularly important in light of conducting integrated assessments under the Superfund Accelerated Cleanup Model (SACM).

### Introduction

The determination of background levels under the Hazard Ranking System (HRS), usually by chemical analysis, is necessary to evaluate an observed release (*Hazard Ranking System, Final Rule*, 40 CFR Part 300, App. A). Background levels are key in establishing attribution of contaminants where multiple sources or contaminant contributors exist. Additionally, an integrated sampling strategy should be considered when determining background levels, as appropriate.

A background level is "the concentration of a hazardous substance that provides a defensible reference point that can be used to evaluate whether or not a release from the site has occurred. The background level should reflect the concentration of the hazardous substance in the medium of concern for the environmental setting on or near a site. Background level does not necessarily represent pre-release conditions, nor conditions in the absence of influence from source(s) at the site" (*Hazard Ranking System Guidance Manual*, November 1992, OSWER Directive 9345.1-07). Background levels do not have to reflect pristine conditions.

Obtaining suitable background samples can be

challenging because of varying media compositions and potentially false assumptions regarding ambient conditions. Consult the *Guidance for Performing Site Inspections Under CERCLA*, September 1992, OSWER Directive 9345.1-05, for information on establishing background levels.

### Resource Considerations

A sampling strategy for an integrated assessment under the Superfund Accelerated Cleanup Model (SACM) should be considered, and planned if appropriate. The elements deemed necessary for an integrated assessment depend on the particular needs of a specific site and could involve similar, additional, or slightly different activities compared to traditional removal or remedial site assessments. (For more information, see *Integrated Removal and Remedial Site Assessment Investigations*, September 1993, OSWER Directive 9345.1-16FS.)

The data gathered from the Site Inspection (SI) may be useful later in the overall site strategy, especially where it appears that a response action may be required. In such cases, site managers may consider a broader

sampling strategy. For instance, such efforts might include collection of the accessory site information for development and use of Soil Screening Levels (SSLs) for use during the Remedial Investigation/Feasibility Study (RI/FS). It is appropriate to use data gathered during the SI for the RI, especially to develop the Conceptual Site Model.

SSLs are not appropriate for use at the SI stage because the objectives of the SI and SSL are different. The objective of the SI is to obtain information on "worst case" or "hot spot" contamination. It is not intended to be a detailed analysis of the extent of contamination, nor a risk assessment. Based on the results of the SI, EPA decides whether the site qualifies for possible inclusion on the National Priorities List or elimination from further Superfund consideration. SSLs are used in the RI to screen out potential contaminants and exposure areas for remedial action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (Draft *Soil Screening Guidance*, December 1994, OSWER Directive 9355.4-14FS).

The Agency for Toxic Substances and Disease Registry (ATSDR) should be consulted when there is the potential for human exposure to toxic substances. The sampling approach for these sites should include data collection for the human exposure information that ATSDR uses to determine if a health advisory is needed. ATSDR also uses this data in the preparation of a public health assessment, which is required within 12 months of proposal to the National Priorities List.

Usually a few background samples are necessary to evaluate an observed release and attribution for HRS purposes. The selection of strategic sampling locations is critical to the success of the SI, which is a limited scope biased sampling event. When feasible, evaluate the benefits of sampling at specific locations and assess the validity of available data to meet SI or other integrated assessment objectives. The data quality objective (DQO) process provides a logical framework for planning multiple field investigations, thereby fulfilling the integrated site assessment goal of cross-program response planning and allowing optimal cross-program data usability. (See *Data Quality Objectives Process for Superfund*, September 1993, OERR Directive 9355.9-01 for further details on the DQO process.)

#### Background Level Determination Without Sampling

Establishing a background level requires determining the concentration level of a hazardous substance. Sampling is not always necessary to make this determination. Some man-made hazardous substances (e.g., pesticides, chlorinated organic solvents, except drinking water chlorination) can be attributed only to a contaminant source. The presence of these substances in the release is sufficient to show contamination; a background sample is not needed (OSWER Directive 9345.1-05).

Sampling may not be necessary for certain sample locations, such as wells, which may serve as their own background (OSWER Directive 9345.1-05). A release can be demonstrated when historical data from a contaminated well or intake show that it was previously uncontaminated or less contaminated. Detailed historical data are useful to define encroachment of a contaminant plume. Often, historical data are available for wells and surface water intakes at industrial sites or municipal water facilities which have a regular monitoring program (OSWER Directive 9345.1-07). For example, a groundwater well or surface water intake may have associated historical analytical data.

In some cases, published background levels may exist that can be applied to a specific site. The following published data sources may be consulted:

- Background sample results from other nearby CERCLA site investigations
- Local surveys by other Federal or State agencies (e.g., U.S. Geological Survey (USGS), Soil Conservation Service (SCS))
- University studies
- Tables or databases with natural concentration ranges and averages in local or regional soils (OSWER Directive 9345.1-05)

Published data may be useful when selecting background sampling locations. If published data are used, multiple sources of information help to support a comparison determination. The use of background level data without sampling (e.g., published data) may be acceptable for SI or HRS scoring activities. The analytical package for the published data should be obtained whenever possible (OSWER Directive 9345.1-05).

Published information may not be appropriate to use in many cases. Published data may not account for regional variations or unique site-specific characteristics (OSWER Directive 9345.1-05). Background levels may vary with regional and local geology (e.g., ore veins, soils with naturally high metals content). It may be difficult to demonstrate comparability using published data because of the difficulty of duplicating sample method and analysis. For comparison, published or existing data should be generated under quality assurance/quality control (QA/QC) measures equivalent to EPA requirements.

### **Considerations for Selecting Background Samples**

Under the HRS, the collection of background samples usually is necessary for the following reasons:

- A release cannot be determined by direct observation;
- The source consists of contaminated soil;
- Historical data are unavailable or insufficient;
- The substance of interest is ubiquitous.

Under the HRS, the highest background sample concentration generally can be used as a background level. In a non-industrial area, average background concentrations may be used when sufficient background samples are collected in a relatively homogeneous environment, and there are no alternative sources of contamination nearby. Qualified analytical data may also be used for background level determination (refer to the interim fact sheet *Using Qualified Data to Document an Observed Release*, July 1994, OSWER Directive 9285.7-14FS, for more information). At least one background sample per pathway or medium of concern should be collected. Preferably the samples should be taken outside the area believed to be influenced by the site. However, it is often necessary to collect more than one background sample.

Determining the location and number of background samples depends upon the following factors:

- Hazardous substances present at the site and expected concentrations the following factors:
- Availability and quality of existing information and analytical data;
- Objectives of the investigation;
- Site hypotheses to be tested;
- Media variability;
- Size of the site, number, and type of sources;

- Pathway-specific considerations (e.g., geologic formations, types of surface water bodies); and
- Other potential sources of contamination in the vicinity of the site (OSWER Directive 9345.1-05)

The number of background samples collected may also depend upon the type of investigation performed. At times, a contaminated background sample can be compared with a release to demonstrate that the site under investigation contributes at least part of the contamination in the release (OSWER Directive 9345.1-05).

In all evaluations, release and background samples must be similar for comparison. Factors which determine sample similarity include location, type, depth, medium, sampling method, preservation, handling, timing, and weather conditions during sampling.

In some situations, collection of a comparable background sample is not possible (e.g., when there is no surface water sample similar to an isolated pond, or when a surface water body originates from a spring) (OSWER Directive 9345.1-05). If background sampling is not possible, substitute published data, as available.

When collecting samples at a site, the activities of the investigation team should not introduce any non-attributable contaminants to samples. Sampling methodology can minimize these potential errors.

Variability introduced by sampling methods can be much greater than that introduced by the analytical laboratory. When feasible, consider variability factors for each HRS pathway under investigation. The following are specific considerations when selecting background samples for each HRS pathway.

### **Ground-water Pathway**

A direct observation of a release to ground water can be documented if it is observed or known that a hazardous substance has been deposited, or the source lies below the water table of the aquifer of concern (e.g., injection well, buried waste). Therefore, a direct observation of a release to ground water does not require establishing a background level, but the presence of a hazardous substance in the release should be documented by manifest data or chemical analysis (OSWER Directives 9345.1-05 and 9345.1-07).

When establishing an observed release to ground water by chemical analysis, background samples generally are needed. Background samples should be collected from nearby wells that are not expected to be influenced by the source of contamination or by other sites. If there are other sites or potential local sources of ground-water contamination, additional background samples should be collected where possible to differentiate their contribution from that of the site under investigation (OSWER Directive 9345.1-05).

### **Similarity of Aquifers**

Aqueous release and background samples must be collected from comparable zones (e.g., saturated zone) in the same aquifer and, where possible, should be collected during the same sampling event. Interconnected aquifers should not be considered as one aquifer when comparing samples for an observed release. When collecting background samples, it is preferable not to use samples from a well screened in two or more aquifers (OSWER Directive 9345.1-05).

When feasible, evaluate aquifer characteristics before selecting wells for sampling, especially in areas of complex or variable geology. Be aware of the existence of mines, faults or other aquifer intrusions which may affect sample representativeness. (Note: Section 7.1 of OSWER Directive 9345.1-07 provides detailed guidance on determining aquifers and aquifer boundaries.)

Note information on ground-water flow direction if it is known or can be easily determined. This information may also be useful in selecting monitoring well installation locations for Expanded Site Inspection (ESI) and Remedial Investigation (RI) work. Information on flow direction should be obtained by using piezometers, by comparing static water levels in existing wells in the same aquifer, and by using data from published reports. The well used for background sampling should be beyond the influence of the site (OSWER Directive 9345.1-05).

### **Comparability of Well Samples**

Samples from any two wells can be considered comparable if both are collected from the same aquifer. Filtered ground-water samples should be compared to filtered background samples; unfiltered ground-water samples should be compared to unfiltered background samples. Ideally, well completion techniques and usage of background wells should be similar to those of the well under

investigation. Sampled wells generally should be screened at similar zones within the same aquifer, depending on the site hydrogeologic setting, because different depths may have different contaminant levels and water chemistry. Depth should be measured as elevation relative to a reference (e.g., mean sea level) instead of below ground surface for data consistency.

Where possible, duplicate purge parameters and method, sampling method, and sampling equipment for all well samples. If possible, sample release and background samples on the same day, but preferably not more than three days apart (OSWER Directive 9345.1-05).

In cases where a background well is not available, consider the possibility of sampling a spring before it reaches the surface by inserting a pipe or well point near the location where ground water discharges at the spring (OSWER Directive 9345.1-05). Sampling data may be supplemented with applicable published data. Springs may be used for background sampling of surficial aquifers only.

### **Surface Water Pathway**

Direct observation of a release to surface water may be documented if material containing a hazardous substance is seen entering surface water; is known to have entered surface water through direct deposition; or is present in a source which is in contact with surface water through flooding. Direct observation of a release to surface water eliminates the need for background sampling, but the presence of a hazardous substance in the release should be documented analytically. A background sample is not required when sampling an effluent discharge from the site into surface water, because the effluent is considered a direct observation.

In non-tidal surface water bodies, it is preferable to sample downstream to upstream. Background sediment samples should be from a location comparable to that of the release (e.g., fine sediments from quiescent zones) (OSWER Directive 9345.1-05). Generally, sediment samples are preferred over aqueous samples for evaluating the surface water pathway because sediments are more likely to retain contaminants. In general, aqueous samples might represent current release conditions, whereas sediment samples might exhibit historical release conditions.

When it is necessary to collect biological samples, background samples from essentially sessile, benthic organisms (e.g., sponges, oysters) can be compared to

similar (same species) tissue samples. Organisms selected for background tissue sampling should be the same gender and approximate age, wherever possible, of those selected for release tissue sampling (OSWER Directive 9345.1-05).

#### Special Considerations for Tidal Water Bodies

Where appropriate, determine the need to collect aqueous and sediment samples when the surface water body is tidally influenced. One approach for background sampling is to collect outside of the zone of tidal influence (this can be gauged by the level of the highest tide). It is possible that tidal flow could pick up additional sources upstream. The effect of the tides on contaminant concentration should be considered. (Upstream concentrations would be highest during the rising tide and lowest at falling tide.) Consider collecting release and background samples at the same tidal level (OSWER Directive 9345.1-07).

#### Comparability of Water Bodies

Consider collecting release and background samples from the same type of water body. Flow characteristics can be used to determine similar water bodies. For example, a background sample from a small tributary should not be compared to a sample from a river. Physical and chemical properties of the surface water (e.g., lack of mixing in large, slow-flow segments of rivers, physical transport mechanisms, and biological influences) are other ways of determining whether water bodies are similar. Where possible, collect release and background samples during the same time period, since thermal stratification and salt/freshwater stratification vary with the time of year. Consider the thermoclines of a pond or lake or measure them in the field prior to sampling (OSWER Directive 9345.1-05 and 9345.1-07).

Simple surface water pathway sampling generally consists of taking a minimum of one Probable Point of Entry (PPE) sample and one upstream background sample. If the surface water pathway has multiple PPEs, multiple background samples may be needed. The number of background samples collected depends on the complexity of the path of the surface water body. The presence of multiple tributaries upstream with multiple potential sources would require collecting multiple background samples in each tributary to differentiate the potential contribution of contamination from off-site sources (OSWER Directives 9345.1-05 and 9345.1-07).

For ponds and lakes, background samples may be collected near the inflow to the water body if it is not influenced by the source. A pond near the site may be selected for background sampling if it exhibits similar physical characteristics to the pond on site. For large ponds and takes, background samples may be collected from the water body itself, but as far away as possible from the influence of the PPE and other potential sources (OSWER Directive 9345.1-07).

#### Air Pathway

Background levels need not be established for the air pathway when an observed release by direct observation is documented. Direct observation of release to the air pathway can be documented in two ways: a release containing hazardous substances is seen entering the atmosphere directly (e.g., observing dust blowing off a pile known to contain hazardous substances), or an adverse effect is demonstrated (e.g., a documented health effect from a reaction of incompatible substances).

Generally, it is necessary to determine background levels for the air pathway because weather conditions can greatly affect them. Throughout the sampling period, it may be necessary to determine the predominant wind direction and speed, effects of low temperatures, existence of flat, open terrain, and any atmospheric instability or lack of air movement. Background sampling should be collected upwind of site sources, although cross-wind samples may be acceptable. It is preferable to collect multiple samples for this pathway, from the same height, and at the same time. Samples from great heights such as rooftops generally are not useful because they do not represent target conditions; very low heights are subject to potential interference from particulates introduced by field activities. Dust, wipe, soil, and soil gas samples are not acceptable for background sampling in the air pathway. Even though these types of samples may be used, along with field air monitoring equipment, to select release and background sample locations, it is recommended that samples and background be collected concurrently. A minimum 12-hour monitoring period is recommended for sampling the air pathway, particularly during hot and dry weather conditions (OSWER Directives 9345.1-05 and 9345.1-07).

Wind roses may be used to determine predominant wind direction, or to document changes in it. Wind direction is important when selecting sample stations (OSWER Directive 9345.1-07). The "rose" diagram consist of bars on a compass face indicating the frequency of each wind



direction during the selected time period, as well as the average high wind speed for the period. If wind roses are utilized, try to determine the elevation for which the wind rose was calculated; this elevation should be representative of target exposure. Weather stations and airports may provide information on local wind direction at ground level and at various elevations.

### **Soil Exposure Pathway**

Because it is not possible to directly observe contamination in the soil exposure pathway, soil must be sampled to determine background levels. As previously mentioned, there will be sites that appear to require response actions (e.g., early actions). In such cases, site managers may consider a broader sampling strategy. Such efforts might include collection of the necessary information for development of soil screening levels (SSLs).

Establishing background levels in the soil pathway can be difficult, particularly if the hazardous substances attributed to the site are naturally occurring. Where possible, collect on-site background soil samples from surficial soils not likely to be affected by the source. Offsite background soil samples should be collected from shallow soils which ideally should not be affected by other sources and sites in the area. However, if there are alternative sources of contamination in the area, background levels should be measured to determine contributions, from them. When possible, sample release and background samples on the same day or within three days. (See Highlight 9-1 of OSWER 9345.1-07 for information on background samples for non-soil sources in the soil exposure pathway.)

Carefully document location, depth, and appearance of all soil samples. If depths and thicknesses of soil strata vary with location, ensure that release and background samples are from a similar stratum and soil type. Samples should have similar texture, color, and grain size (OSWER Directive 9345.1-05). Grab samples (as opposed to composite) are preferred for determining soil contamination in the SI. Preferably obtain the background sample from an undisturbed, unfilled area, because fill may have contaminants which are not representative of background conditions. If a site is located on fill, it may be necessary to obtain the background samples from a similarly filled area (where the fill is not considered one of the areas of observed contamination at the site) (OSWER Directive 9345.1-07). It is a recommended strategy to

select more than one background sample and location for the soil exposure pathway. Avoid collecting background soil samples from a drainage channel which receives water from off site (OSWER Directive 9345.1-07). Where possible, collect background samples from a higher elevation than the sources to avoid the effect of potential surface drainage. Avoid background sample locations that are subject to airborne contamination from the site or other sources (OSWER Directives 9345.1-05 and 9345.1-07).

### **Determining Background Levels In Industrial, Mining, and Radioactive Areas**

Industrial areas can pose a special challenge to determining background levels. Ambient conditions may include elevated concentrations of common contaminants from sources not associated with the site. Some common contaminants in background samples in industrial and urban areas include:

- Metals in soils (e.g., lead)
- Trichloroethene (TCE) and perchloroethene (PCE) in urban aquifers
- Organic substances in harbor sediments (OSWER Directive 9345.1-05)

In industrial areas, the investigator often needs to document that a sample is above background sample variability. One approach is to determine where potential alternative sources exist and where they could possibly interfere with release or background samples. Because industrial areas are affected by increased levels of contaminants and greater local variability, additional background samples may be required to establish off-site conditions. Be sure to collect a sufficient number of samples between the site and all other potential sources of contamination in order to attribute the increase to the site (OSWER Directive 9345.1-05). In general, it is inappropriate to average background samples in an industrial area where more than one type of industry existed because doing so could lead to unacceptable levels of local variability (see *Establishing Areas of Observed Contamination*, September 1995, OSWER Directive 9295.7-18FS, for more detailed information).

Mining areas, like industrial areas, pose a challenge to determining background levels. Often the contaminants associated with the mine are naturally occurring elements. Surface water may originate from the mine, presenting no upstream location for background

sampling. Surface water may pass through the mined watershed. Consequently, the nearest upstream location away from the influence of the site may be in a different geologic formation, with different water chemistry, producing uncertainty about comparability.

When surface water in mining areas originates in the source or when no similar upstream location exists, a water body with similar physical characteristics (e.g., a similar stream on the other side of a mined hill) should be selected for background sampling. The similar water body should not be directly affected by the site. Concentrations in the vicinity of mining sites may be so significantly elevated that published data may provide a more reasonable background level.

Mines are often located in areas with aquifers that are highly fractured or influenced by mine drainage tunnels. In mining areas, it may be difficult to find undisturbed areas in which to locate ground-water wells and therefore, difficult to determine ground-water background levels. In such cases, it is preferable to determine an observed release by direct observation.

Mine tailings generally contain minerals and are considered waste. Collecting background samples is not necessary if tailings are analyzed and the mineral concentrations are shown to be elevated well beyond what might be expected under natural conditions.

To sample sites with radioactive wastes, follow sampling strategies similar to those for other hazardous substances. Criteria to establish an observed release through chemical analysis for radioactive substances exist for the following three groups:

- Radionuclides that occur naturally, or ubiquitous man-made radionuclides;
- Non-ubiquitous man-made radionuclides; and
- External gamma radiation (soil exposure

pathway only).

Some portion of the release must be attributable to the site. For each group, compare release concentrations against known background radionuclide concentrations against detection limits for a sample medium. Section 4.9.4 of OSWER Directive 9345.1-05 provides details on establishing an observed release for each group.

### Summary

Thorough documentation of the locations of the background samples and potential alternative sources is necessary to assess the adequacy of the background levels and to evaluate release and attribution. The benefits of sampling at specific locations should be evaluated and the validity of existing analytical data should be assessed. Meet SI objectives while conserving Superfund resources. Direct observation of a release does not require background sampling if detectable concentrations of hazardous substances are documented to be present in the source. Background samples may not be necessary for certain man-made compounds. If demonstrating a release or establishing actual contamination is critical to evaluating a site, background or QA/QC samples should not be limited unduly because of budgetary considerations—collecting these samples may prevent having to return to the site.

To establish background levels by chemical analysis, on-site and off-site sources and their locations should be thoroughly reviewed. Release and background samples should be collected from similar locations and media. Ground-water samples are similar when they come from the same zone within an aquifer and undergo similar sample preparation. Background samples for surface water should be collected upstream of the PPE. Additional site reconnaissance and review are often needed to select sampling locations in industrial and mining areas and at complex sites.

Appendix C  
Wind Diagram

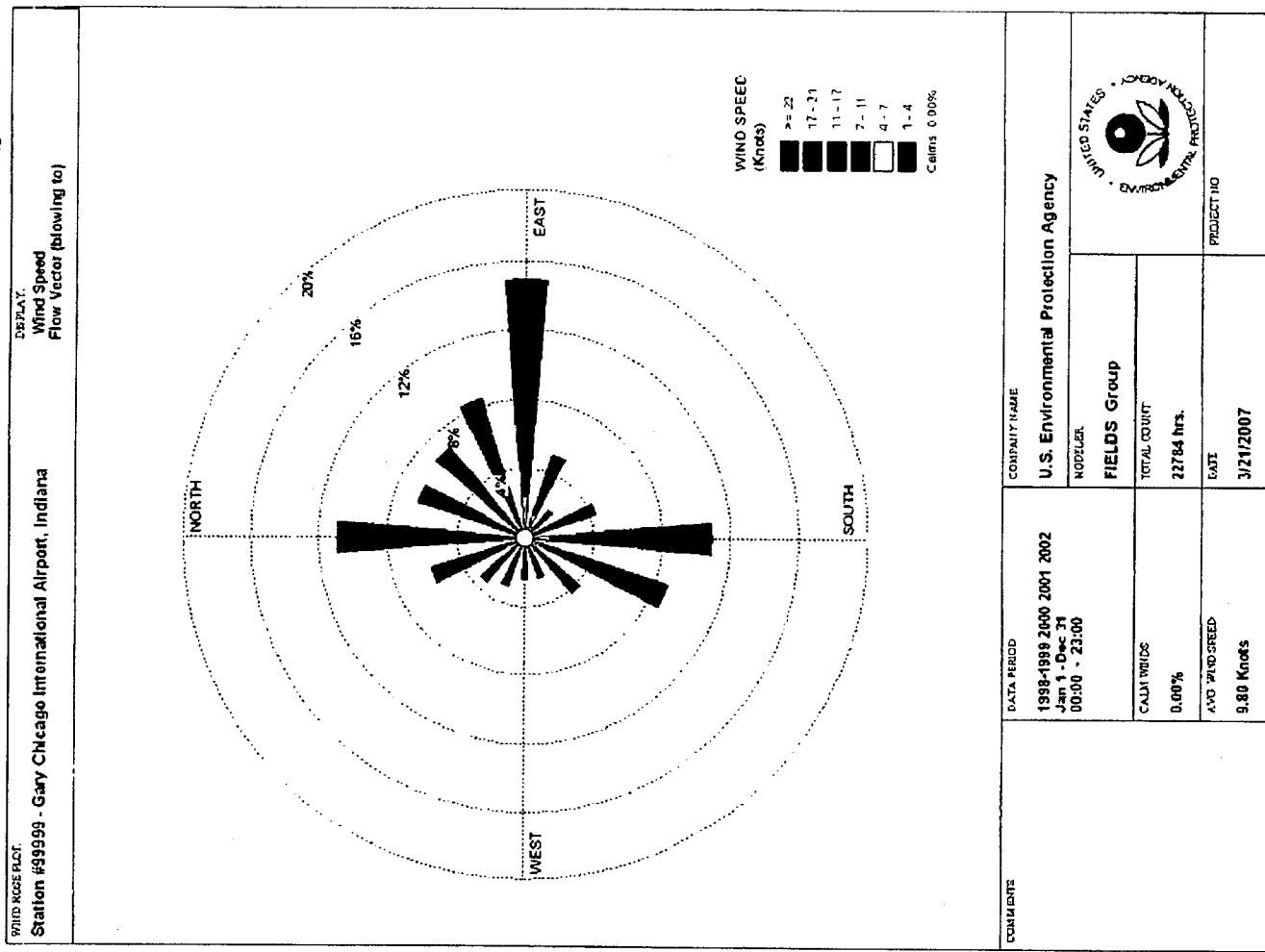
# Wind directionality

Directions of interest for satellites:

- W, NW, SE, SW

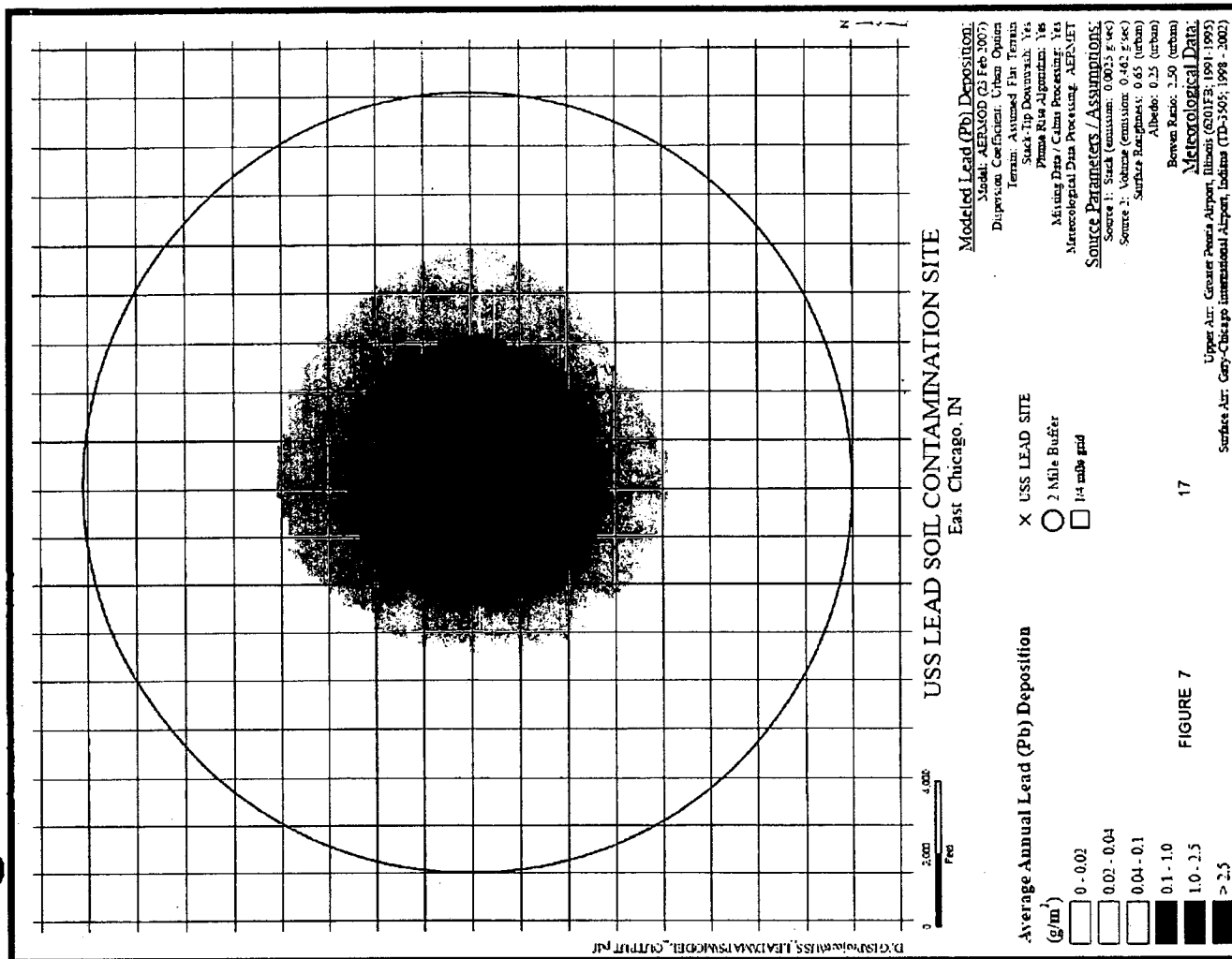
Directions of greatest deposition:

- N, NE, E, and S
- possibly SSW



# Predicted concentrations

Low likelihood of high lead (Pb) values beyond two miles from the site (outside of red circle)



Appendix D

Published EPA Information on Soil Lead Concentrations

TRACE CHEMICAL ELEMENT CONTENT OF NATURAL SOILS

<u>Element</u>	<u>Common Range</u> <u>(ppm)</u>	<u>Average</u> <u>(ppm)</u>	<u>Element</u>	<u>Common Range</u> <u>(ppm)</u>	<u>Average</u> <u>(ppm)</u>
Aluminum	10,000-300,000	71,000	Lithium	5-200	20
Antimony	2-10	-	Magnesium	600-6,000	5,000
Arsenic	1-50	5	Manganese	20-3,000	600
Barium	100-3,000	430	Mercury	0.01-0.3	.03
Beryllium	0.1-40	6	Molybdenum	0.2-5	2
Boron	2-100	10	Nickel	5-500	40
Bromine	1-10	5	Radium	$8 \times 10^{-5}$	
Cadmium	0.01- <sup>7.0 (7)</sup> 0.7	.06	Rubidium	50-500	10
Cesium	0.3-25	6	Selenium	0.1-2	.3
Chlorine	20-900	100	Silver	0.01-5	.05
Chromium	1-1,000	100	Strontium	50-1,000	200
Cobalt	1-40	8	Tin	2-200	10
Copper	2-100	30	Tungsten		1
Fluorine	10-4,000	200	Uranium	0.9-9	1
Gallium	0.4-300	30	Vanadium	20-500	100
Gold		1	Yttrium	25-250	50
Iodine	0.1-40	5	Zinc	10-300	50
Lanthanum	1-5,000	30	Zirconium	60-2,000	300
Lead	2-200	10			

REF: USEPA Office of Solid Waste and Emergency Response, HAZARDOUS WASTE LAND TREATMENT, SW-874 (A), pgs 273, Table 6.46.

Table III.6.4.

Appendix E  
Soil Survey of Lake County, Indiana



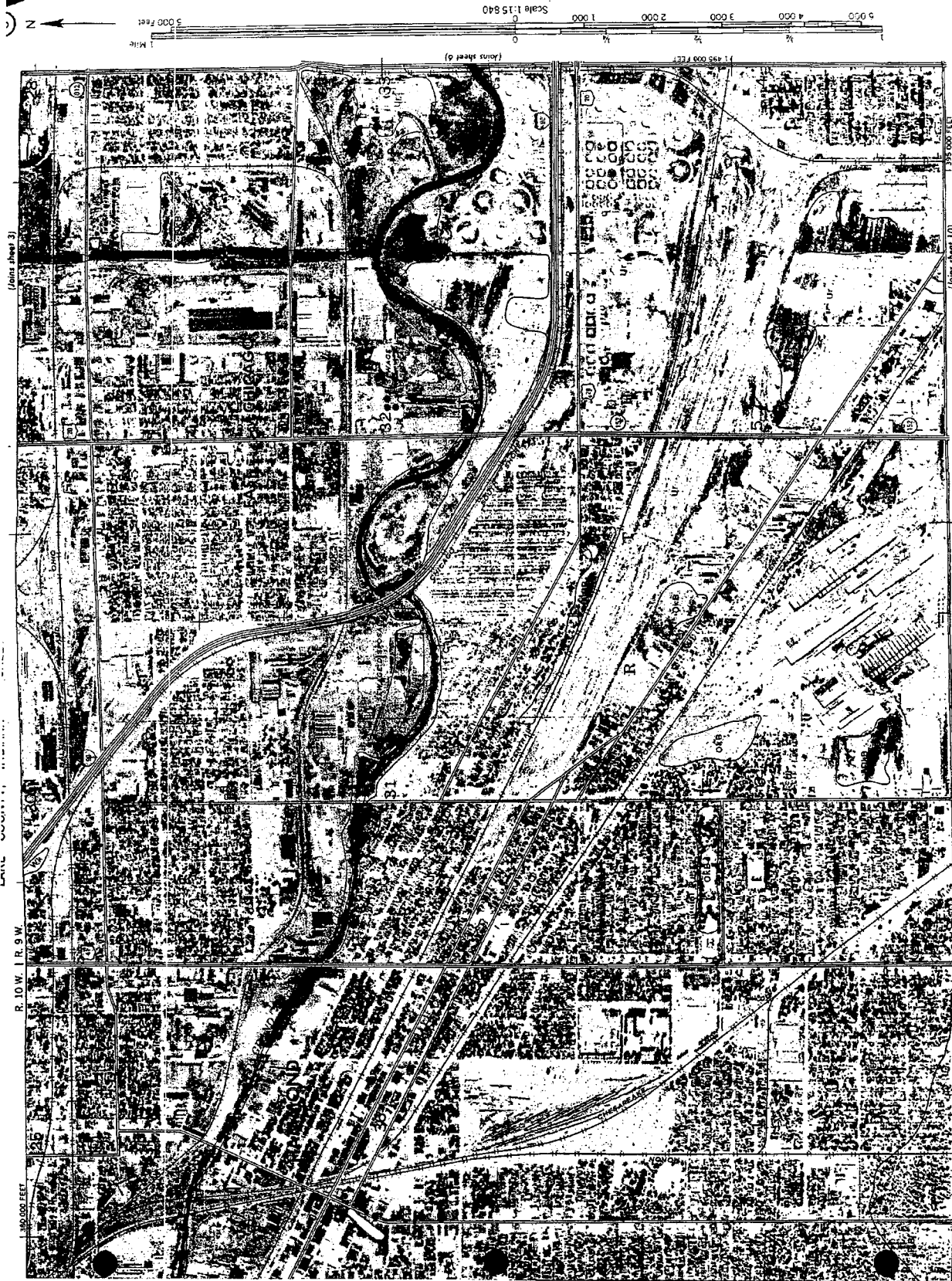
SOIL SURVEY OF  
**Lake County, Indiana**



**United States Department of Agriculture  
Soil Conservation Service**

**In cooperation with  
Purdue University  
Agricultural Experiment Station**

Issued July 1972

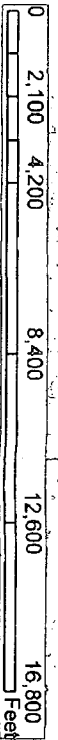


Appendix F  
Background Sample Location Map

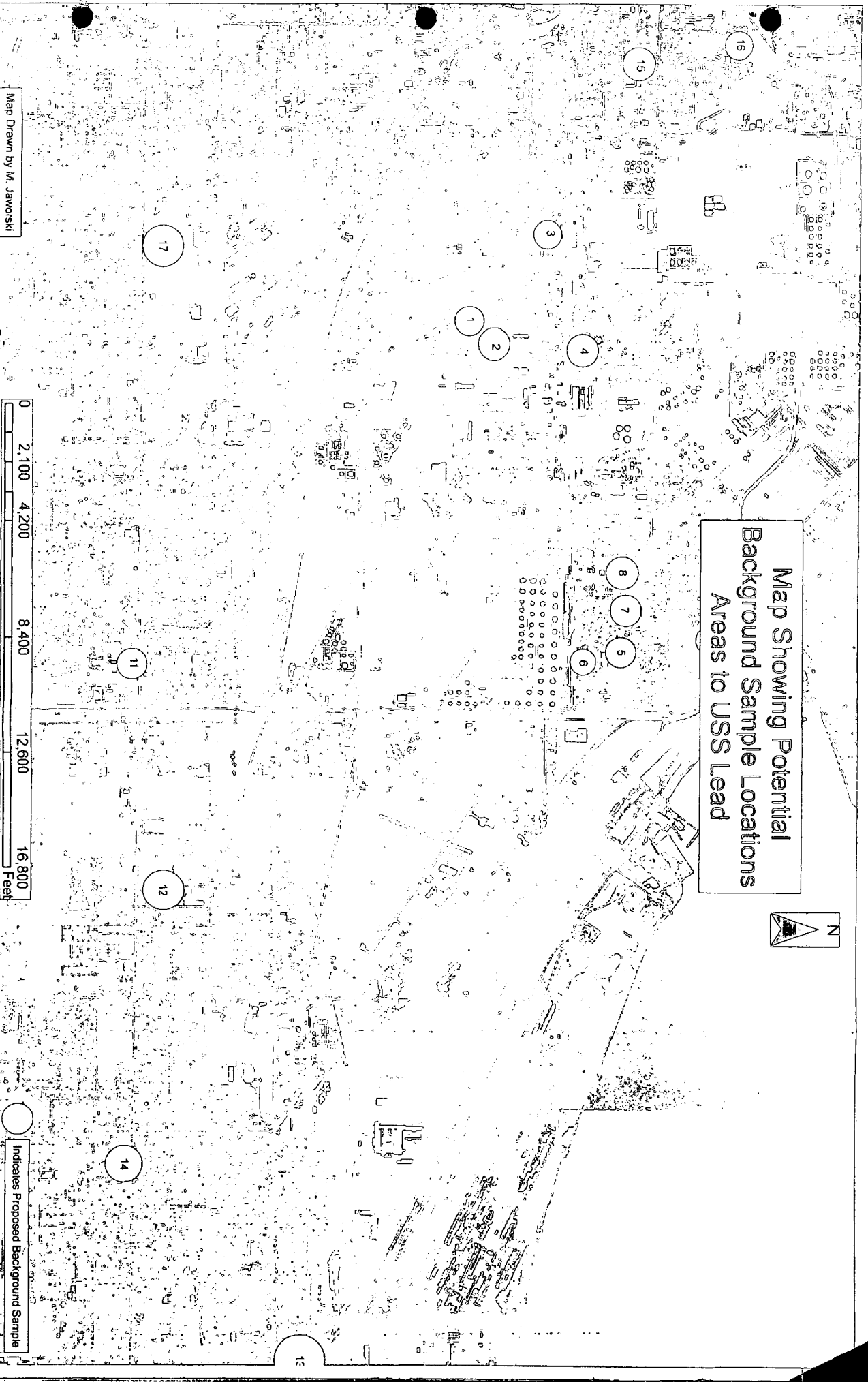
Map Showing Potential  
Background Sample Locations  
Areas to USS Lead



Map Drawn by M. Jaworski



○ Indicates Proposed Background Sample



Appendix G  
Historical Aerial Photograph Findings

**Proposed Background Sample Area #1 (Kosciusko Park)**

- 1) Aerial photo flown 10-31-1938; Plate BFJ-1-58:
  - The photo reveals a park setting.
  - The SW ball diamond is present.
- 2) Aerial photo flown 9-12-1958; Plate BFJ-2V-109:
  - The photo reveals a park setting.
  - The SW ball diamond is present.
- 3) Aerial photo flown 7-15-1965; Plate BFJ-1FF-53:
  - The photo reveals a park setting.
  - The SW ball diamond appears to be no longer in use.
  - A ball diamond located in the NW sector of the parcel appears to be active.
- 4) Aerial photo flown 9-6-73; Plate 173-109:
  - The photo reveals a park setting.
  - The SW ball diamond is active.

**Proposed Background Sample Area #2 (Small Park located at NE corner of 150<sup>th</sup> Street. and Magoun Ave.)**

- 1) Aerial photo flown 10-31-1938, Plate BFJ-1-58:
  - The photo reveals a park setting.
- 2) Aerial photo flown 9-12-1958, Plate BFJ-2V-109:
  - The photo reveals a park setting.
- 3) Aerial photo flown 7-15-1965, Plate BFJ-1FF-53:
  - The photo reveals a park setting.
- 4) Aerial photo flown 9-6-73, Plate 173-109:
  - The photo reveals a park setting.

**Proposed Background Sample Area #3 (School athletic Field located SW corner of Chicago (312) Second White Oak Ave.)**

- 1) Aerial photo flown 10-31-1938, Plate BFJ-1-58:
  - A school is present within an undisturbed dune and swale area.
- 2) Aerial photo flown 9-12-1958, Plate BFJ-2V-109:
  - The school is present.

The dune and swale area has been graded.
- 3) Aerial photo flown 7-15-1965, Plate BFJ-1FF-53:
  - A new school is being built on the NE corner of the area.
  - A new football field has been established on the NW sector of parcel.
- 4) Aerial photo flown 9-6-73, Plate 173-109:
  - The photo shows the same as the 1965 photo.

**Proposed Background Sample Area # 4 (Small Park at Chicago Ave. and Indianapolis Blvd. - North 2 blocks-(NE corner of 145<sup>th</sup> St. and US 20)**

- 1) Aerial photo flown 10-31-1938, Plate BFJ-1-58:
  - The photo reveals a park setting.
- 2) Aerial photo flown 9-12-1958, Plate BFJ-2V-109:
  - The photo reveals a park setting.
  - A structure is present in the SW corner of the area.
- 3) Aerial photo flown 7-15-1965, Plate BFJ-1FF-53:
  - The photo reveals a park setting as in the 1958 photo.
  - What appears to be a "silo" is located in middle south of park.
- 4) Aerial photo flown 9-6-73, Plate 173-109:
  - The "silo" is gone.
  - The photo otherwise shows the same as the 1965 photo.

**Proposed Background Sample Area # 5 (School Athletic Field- Columbus Dr. and Alder St.)**

- 1) Aerial photo flown 6-5-39, Plate BFJ-6-6:
  - The photo shows an undisturbed dune and swale area.
- 2) Aerial photo flown 9-12-58, Plate BFJ-2V- 94:
  - A football field is now present.
  - The area north of structure is undeveloped.
- 3) Aerial photos flown 7-15-1965, Plates BFJ-1FF-120 and BFJ-1FF-121:
  - Area 5A appears undeveloped and is the same as the 1958 photo.
  - Area 5B appears to have had a structure built on the property.
- 4) Aerial photo flown 9-6-73, Plate 173-99:
  - The photo shows relatively the same view as the 1965 photo.

**Proposed Background Sample Area #6 (Subdivision- Guadalupe Dr. and Lane of Roses)**

- 1) Aerial photo flown 6-5-39, Plate BFJ-6-6:
  - The photo shows undisturbed dune and swale.
- 2) Aerial photo flown 9-12-58, Plate BFJ-2V-94:
  - The photo shows undisturbed dune and swale.
- 3) Aerial photo flown 7-15-65, BFJ-1FF-120 and BFJ-1FF- 121:
  - The area is now graded and undeveloped,
- 4) Aerial photo 9-6-73, Plate 173-99:
  - The photo shows the same as the 1965 photo.

**Proposed Background Sample Area #7 (Subdivision- Cardinal Dr. and Hidalgo)**

- 1) Aerial photo flown 6-5-39, Plate BFJ-6-6:
  - The photo shows undisturbed dune and swale
- 2) Aerial photo flown 9-12-58, Plate BFJ-2V-94:
  - The photo shows undisturbed dune and swale
- 3) Aerial photo flown 7-15-65, Plates BFJ-1FF-120 and BFJ-1FF- 121:
  - The photo shows that new streets and a subdivision has been developed in this area. Refer to the 2007 close up map.
- 4) Aerial photo flown 9-6-73, plate 173-99:
  - The photo shows the same as the 1965 photo. Refer to the close up map.

**Proposed Background Sample Area #8 (Park- East Chicago- NW corner of Deodar St. and Broadway St.)**

- 1) Aerial photo flown 6-5-39, Plate BFJ-6-6:
  - The photo shows a park setting.
- 2) Aerial photo flown 9-12-58, Plate BFJ-2V-94:
  - The photo shows a park setting.
- 3) Aerial photo flown 7-15-65, Plates BFJ-1FF-120 and BFJ-1FF-122:
  - The photo a park setting with less trees than observed in the 1958 photo.
- 4) Aerial photo flown 9-6-73, Plate 173-99:
  - The photo shows a park setting with a ball diamond in the SW corner of the area.



**Proposed Background Sample Area #9 (Park- East Chicago-SW corner of Alde St. and Broadway St.)**

- 1) Aerial photo flown 6-5-39, Plate BFJ-6-6:
  - The photo shows a park setting.
- 2) Aerial photo flown 9-12-58, Plate BFJ- 2V-94:
  - The photo shows a park setting.
- 3) Aerial photo flown 7-15-65, Plates BFJ-1FF-120 and BFJ-1FF-122:
  - These photos show a park setting.
- 4) Aerial photo flown 9-6-73, Plate 173-99:
  - The photo shows a park setting.

**Proposed Background Sample Area #10 (Ball diamond- East Chicago- NW corner of Deodar St. and Broadway St.)**

- 1) Aerial photo flown 6-5-39, Plate BFJ-6-6:
  - The photo shows a residential area.
- 2) Aerial photo flown 9-12-58, Plate BFJ- 2V-94:
  - The photo shows a residential area.
- 3) Aerial photo flown 7-15-65, Plates BFJ-1FF-120 and BFJ-1FF-122:
  - The photos show that the area is residential.
- 4) Aerial photo flown 9-6-73, Plate 173-99:
  - The photo shows that activity has begun to leveling houses in order to make a park.

**Proposed Background Sample Area #11 (School athletic field- SW corner of 169th and New Hampshire Ave.)**

- 1) Aerial photo flown 6-5-39, Plate BFJ-6-9:
  - The area is undisturbed with dune and swale features.
- 2) Aerial photo flown 9-12-58, Plate BFJ- 2V-90:
  - There are three (3) small structures are present west of the proposed sampling area.
- 3) Aerial photo flown 7-15-65, Plates BFJ-1FF-133 and BFJ-1FF-118:
  - The three (3) small structures mentioned for the year of 1958 are no longer observed in this photo.
  - The majority of the area is still exhibits dune and swale features.
- 4) Aerial photo flown 9-6-73, Plate 173-97:
  - A school is present on the area and athletic field has been established on east side.

**Proposed Background Sample Area #12 (Gary-School athletic field, NW corner of 15<sup>th</sup> and Gerry St.**

- 1) Aerial photo flown 10-31-38, Plate BFJ-2-88.
  - The photo shows undisturbed dune and swale features.
- 2) Aerial photo flown 9-12-58, Plate BFJ- 2V-90:
  - The photo shows undisturbed dune and swale features.
- 3) Aerial photo flown 7-15-65, Plate BFJ-1FF-133:
  - The photo shows undisturbed dune and swale features.
  - Construction activity is occurring NE of this area.
- 4) Aerial photo flown 9-6-73, Plate 173-97:
  - An athletic field is now present to the north along with a residential area to the NE.

**Proposed Background Sample Area #13 (Gary-Michael Jackson Park, NE corner of US 20 west and Van Buren)**

- 1) Aerial photo flown 11-2-38, Plate BFJ-3-79:
  - The photo shows that soil has been graded.
  - An unknown non-residential structure is located in the south half of the area; possibly municipal.
- 2) Aerial photo flown 9-12-58, Plate BFJ- 2V-13:
  - The photo shows more structures on south half of the area.
  - There are no structures in north half.
- 3) Aerial photo flown 7-15-65, Plate BFJ-1FF-207:
  - A round structure is present in the south half of the area.
  - The upper right structure is more developed.
  - The NW corner of the area is undeveloped.
- 4) Aerial photo flown 9-6-73, Plate 173-145:
  - A ball diamond is present in the NW corner of the site; otherwise the photo shows the same as in the 1965 photo.
  - In 2007, round structure is gone.

**Proposed Background Sample Area #14 (Gary-Park- SW corner of 15<sup>th</sup> Avenue and Ellsworth St.**

- 1) Aerial photo flown 11-2-38, Plate BFJ-3-69:
  - The photo shows that the land is cleared.
  - There are no structures present.
- 2) Aerial photo flown 9-12-58, Plate BFJ- 2V-13:
  - The photo shows that area is wooded.
  - It appears that some trees have been planted in a row.
- 3) Aerial photo flown 7-15-65, Plate BFJ-1FF-198:
  - There is a new structure on the middle of east side of the area.
  - The photo shows the same view as present (2007).
- 4) Aerial photo flown 9-6-73, Plate 173-145.
  - The photo shows the same as present (2007).

**Proposed Background Sample Area #15 (Residential area- Gostlin St. and Sheffield Av.)**

- 1) Aerial photo flown 11-2-38, Plates BFJ-1V-57 and BFJ-1-39:
  - The photos show that the area is residential.
- 2) Aerial photo flown 11-2-38, Plate BFJ-2V-190:
  - The photo shows that the area is residential.
- 3) Aerial photo flown 7-15-65, Plates BFJ-1FF-151 and BFJ-1FF-122:
  - The photos show that area is still residential.
- 4) Aerial photo flown 9-6-73, Plate 173-145:
  - The photo shows that the area is residential.

**Proposed Background Sample Area #16 (Trailer Park)**

- 1) Aerial photo flown 11-2-38, Plates BFJ-1V-57 and BFJ-1-39:
  - It is questionable if the area is undisturbed.
  - The area may possibly be a slurry or just an undisturbed area.
- 2) Aerial photo flown 11-2-38, Plates BFJ-1V-57:
  - The photo shows that a trailer park is present in this area.
- 3) Aerial photo flown 7-15-65, Plate BFJ-1FF-51:
  - The photo shows that a trailer park is present in this area.
- 4) Aerial photo flown 9-6-73, Plate 173-145:
  - The photo shows that a trailer park is still present in this area..

Proposed Background Sample Area #17 (Cemetery)

- 1) Aerial photo flown 11-2-38, Plates BFJ-1-59:
  - The photo indicates that a cemetery is probably present in this area.
  - Small winding roads can be observed in the photo.
- 2) Aerial photo flown 11-2-38, Plates BFJ-2V-110:
  - Essentially the same features are present as observed in the 1938 photo.
- 3) Aerial photo flown 7-15-65, Plate BFJ-1FF-51:
  - Photo indicates that a cemetery is present.
- 4) Aerial photo flown 9-6-73, Plate 173-145:
  - The photo indicates that cemetery is present

Appendix H  
Aerial Close Up Maps



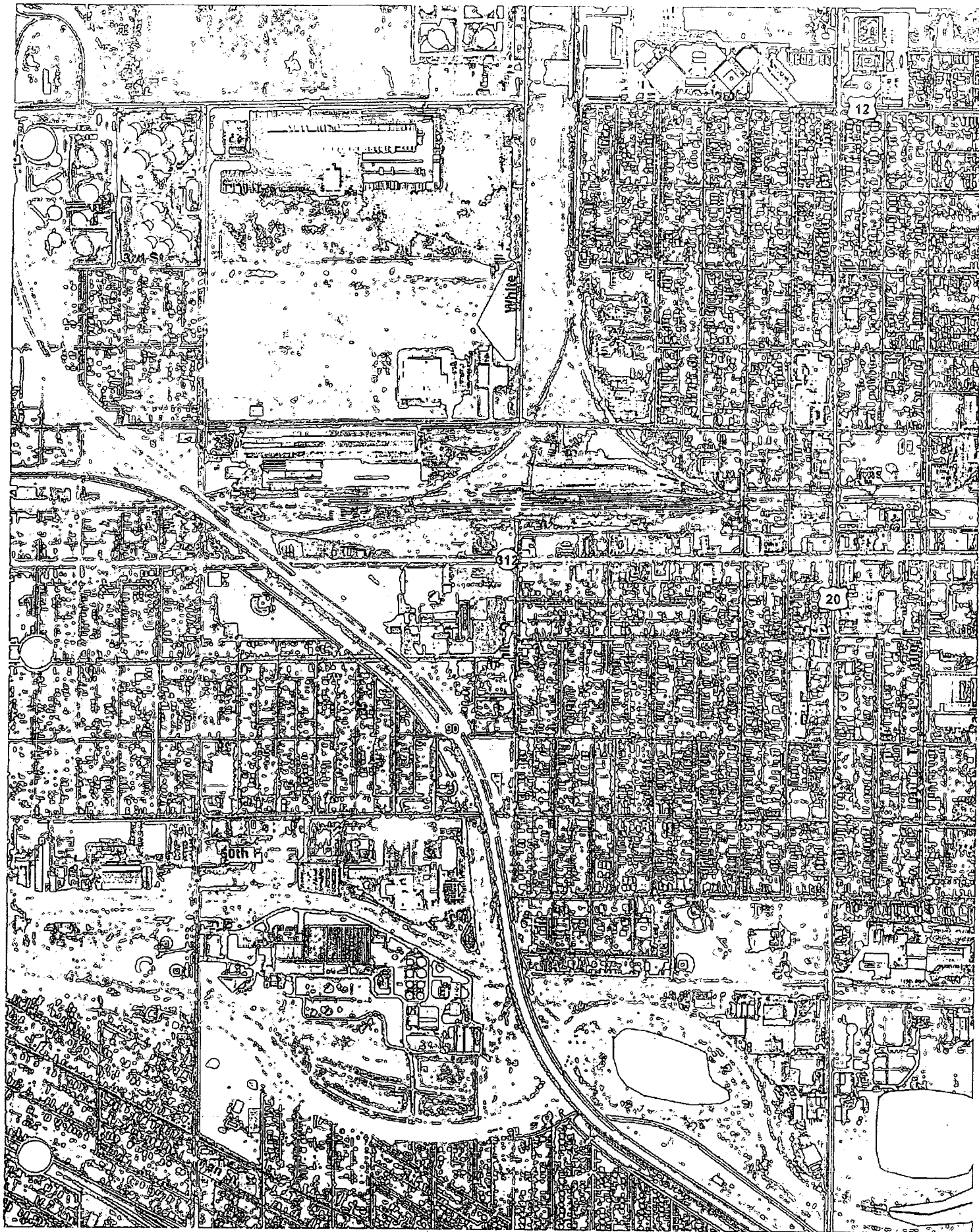
U.S. SMELTER AND LEAD RESIDENTIAL  
Background Sampling

- 1) Kosciusko Park  
South side of 151<sup>st</sup> Street  
@ Baring Avenue or  
Northcote Avenue (ball diamond)
- 2) Small Park  
Northeast corner of 150<sup>th</sup> Street  
and Magoun Avenue
- 3) School Athletic Field  
Southwest corner of Chicago (312)  
and 2<sup>nd</sup> White Oak Avenue



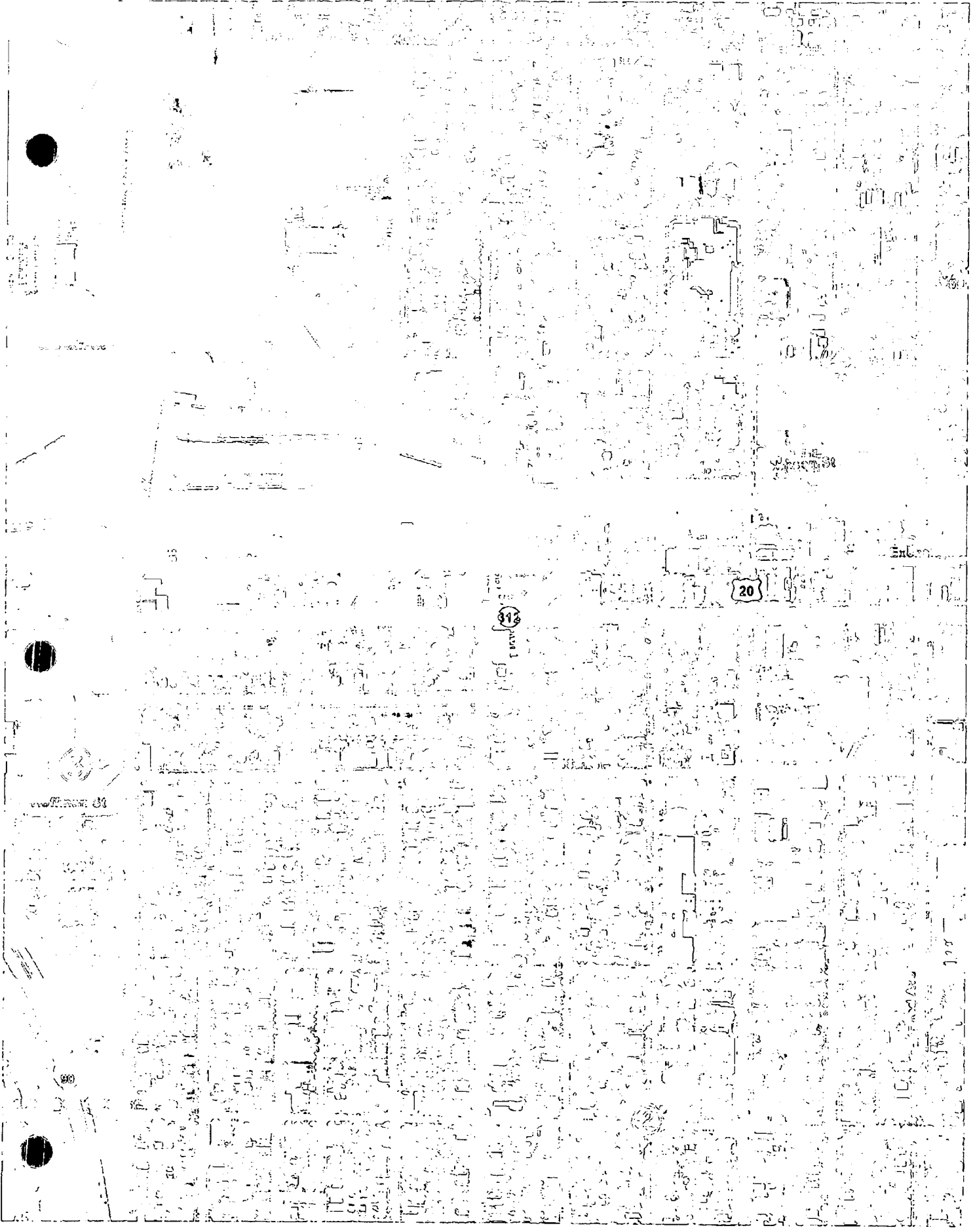


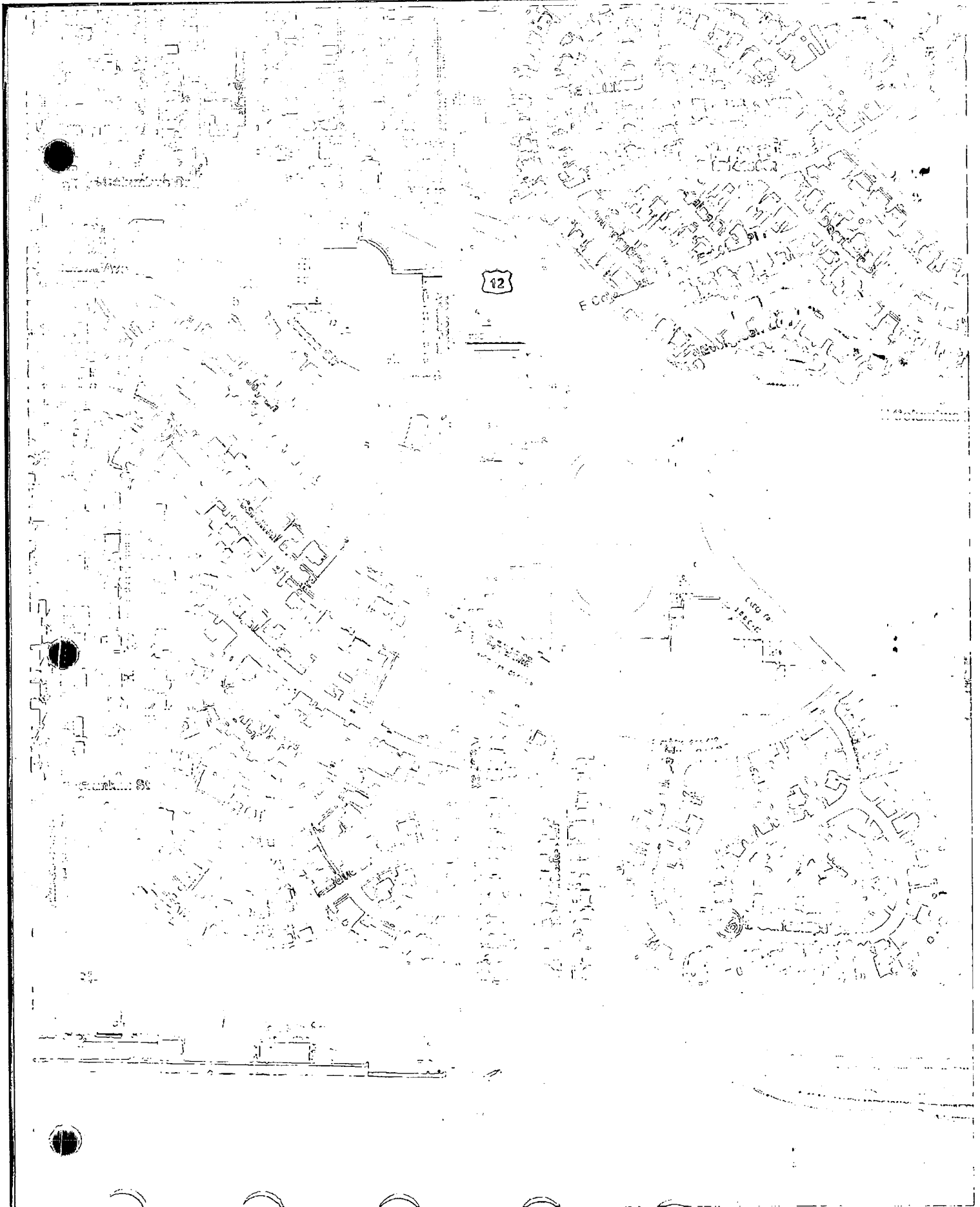


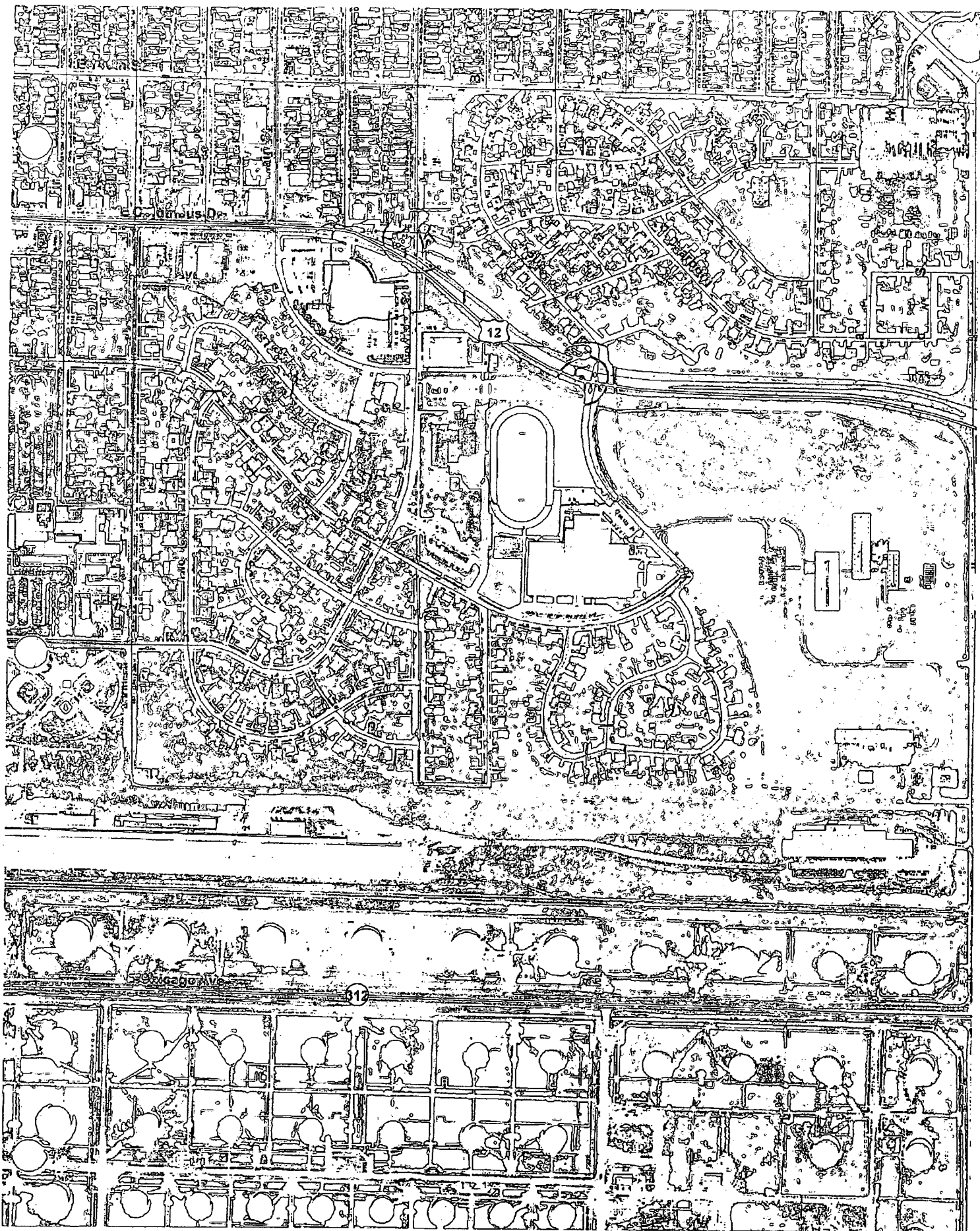


U.S. SMELTER AND LEAD RESIDENTIAL (continued)  
Background Sampling

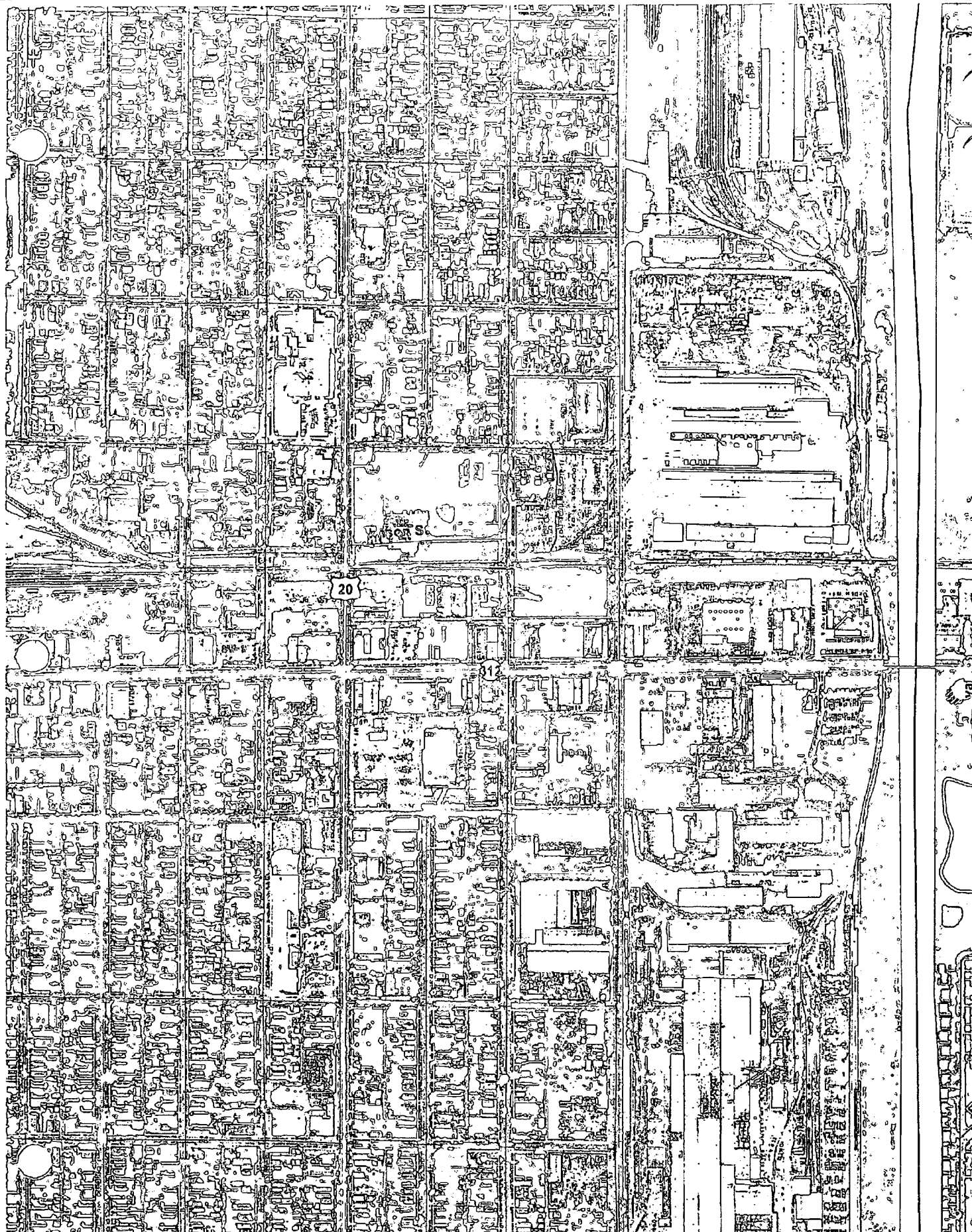
- 4) Small Park  
Chicago Avenue (312) and  
Indianapolis Boulevard (U.S. 20)  
North 2 blocks (Northeast corner  
of 145 the Street & U.S. 20)
- 5) School Athletic Field (E.C.)  
Columbus Drive (U.S. 12) and  
Alde Street (Southeast corner)
- 6) Subdivision (East Chicago)  
Guadalupe Drive and  
Lane of the Roses

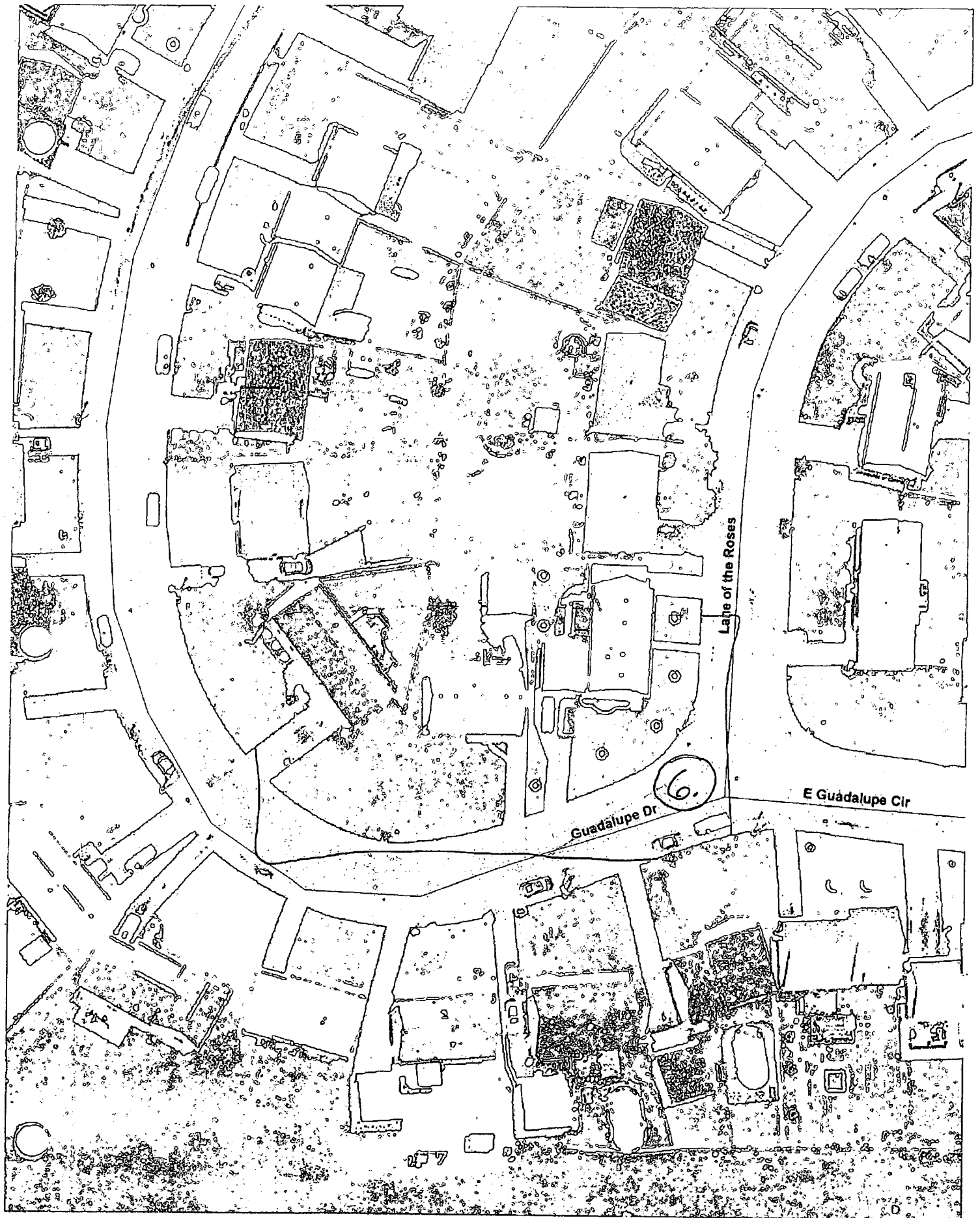














U.S. SMELTER AND LEAD RESIDENTIAL (continued)  
Background Sampling

- 7) Subdivision (East Chicago)  
Cardinal Drive and  
Hidalgo Lane
- 8) Park (East Chicago)  
Southeast Corner of 142<sup>nd</sup> Street  
and Parrish Avenue
- 9) Park (East Chicago)  
Southwest corner of Alde Street  
and Broadway Street
- 10) Ball Diamond (East Chicago)  
Northwest corner of Deadar Street  
and Broadway Street

Unknown

12

100000

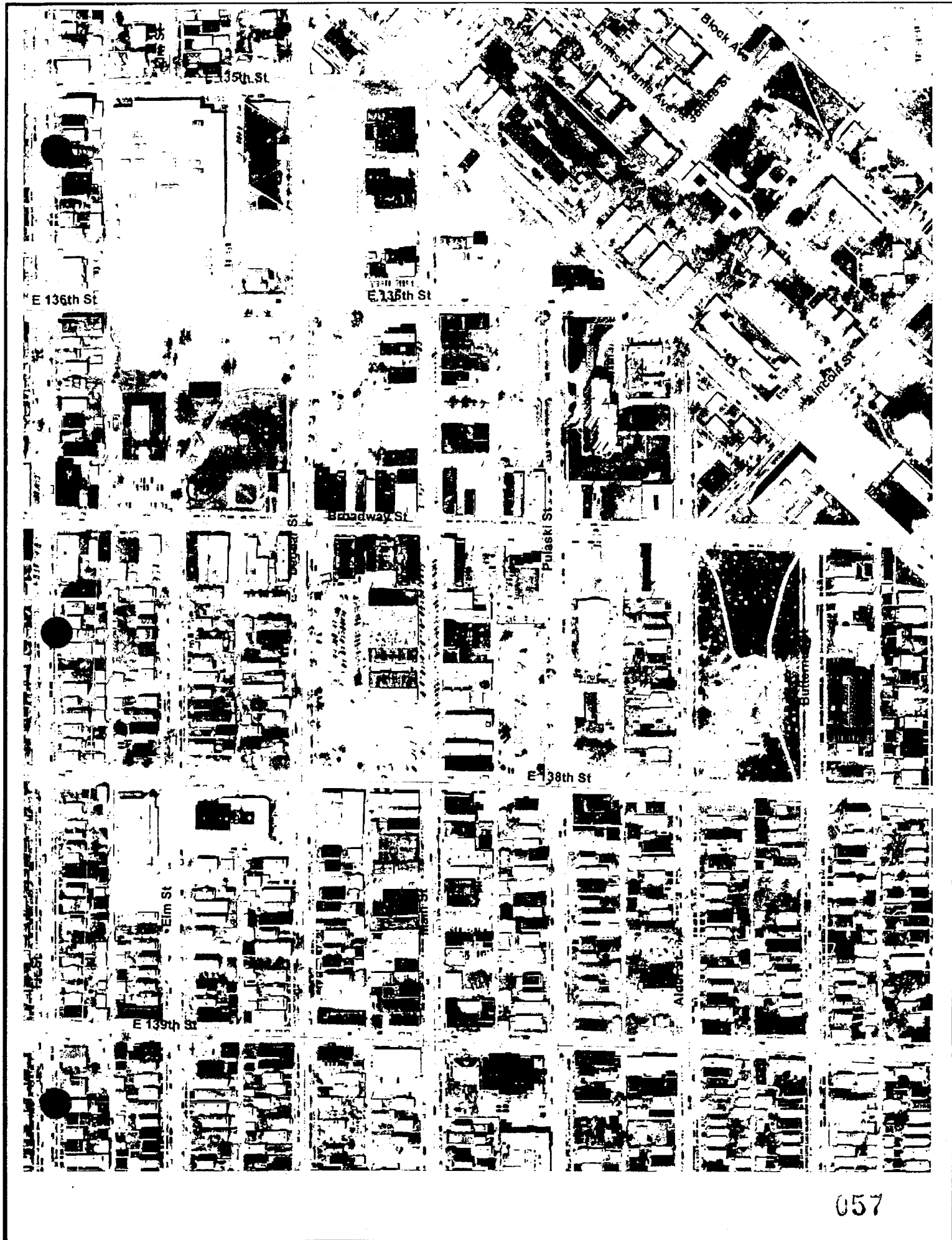
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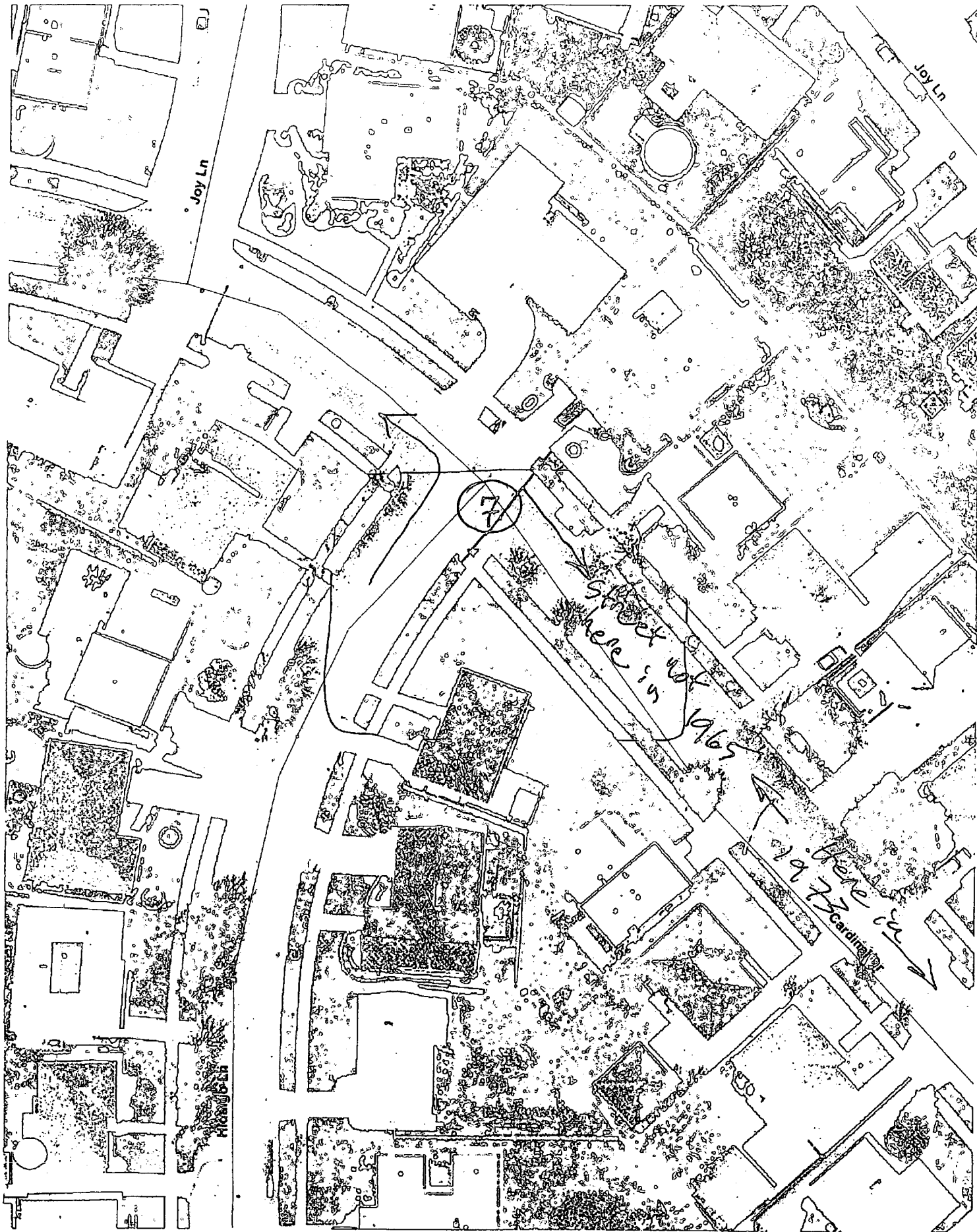
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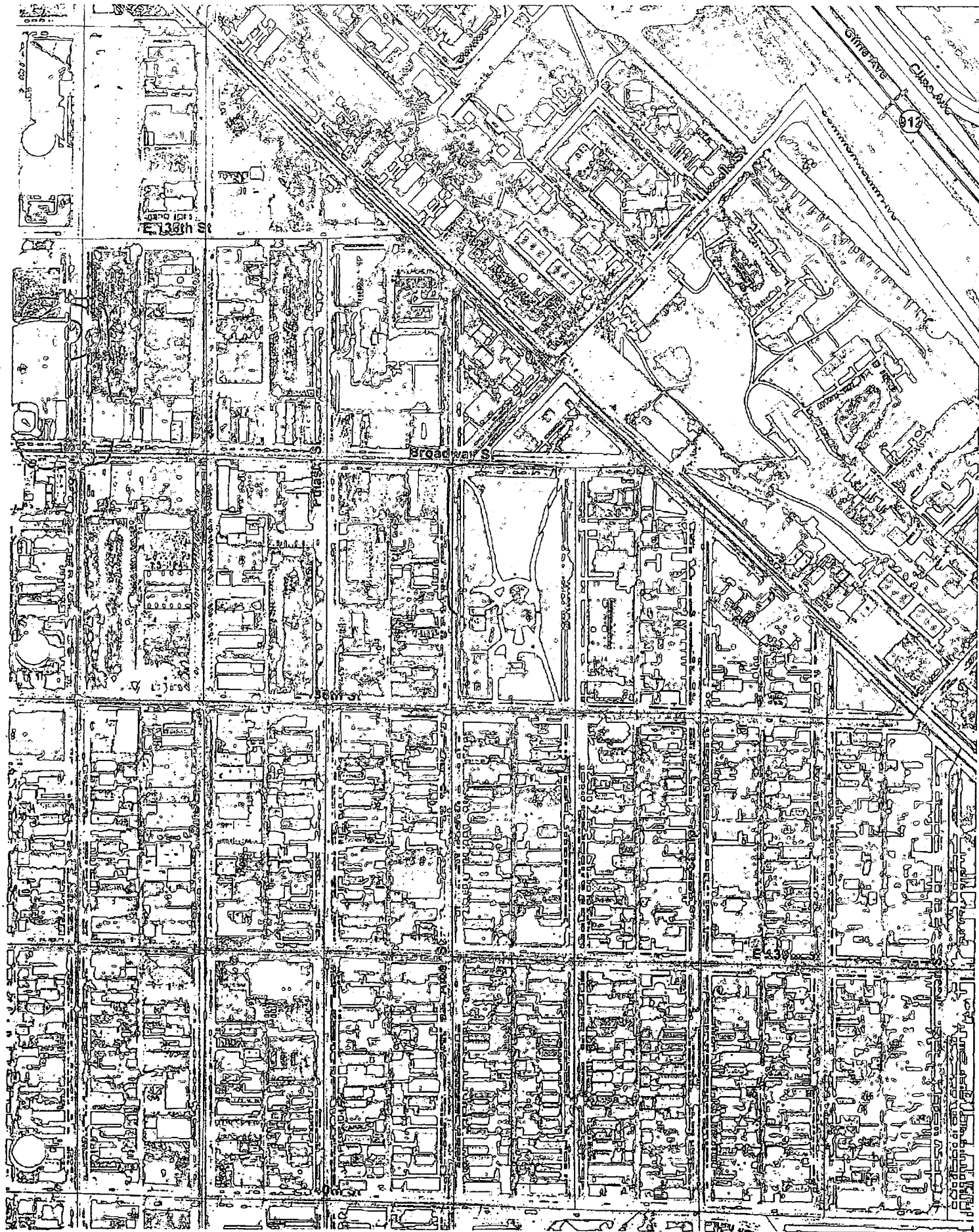
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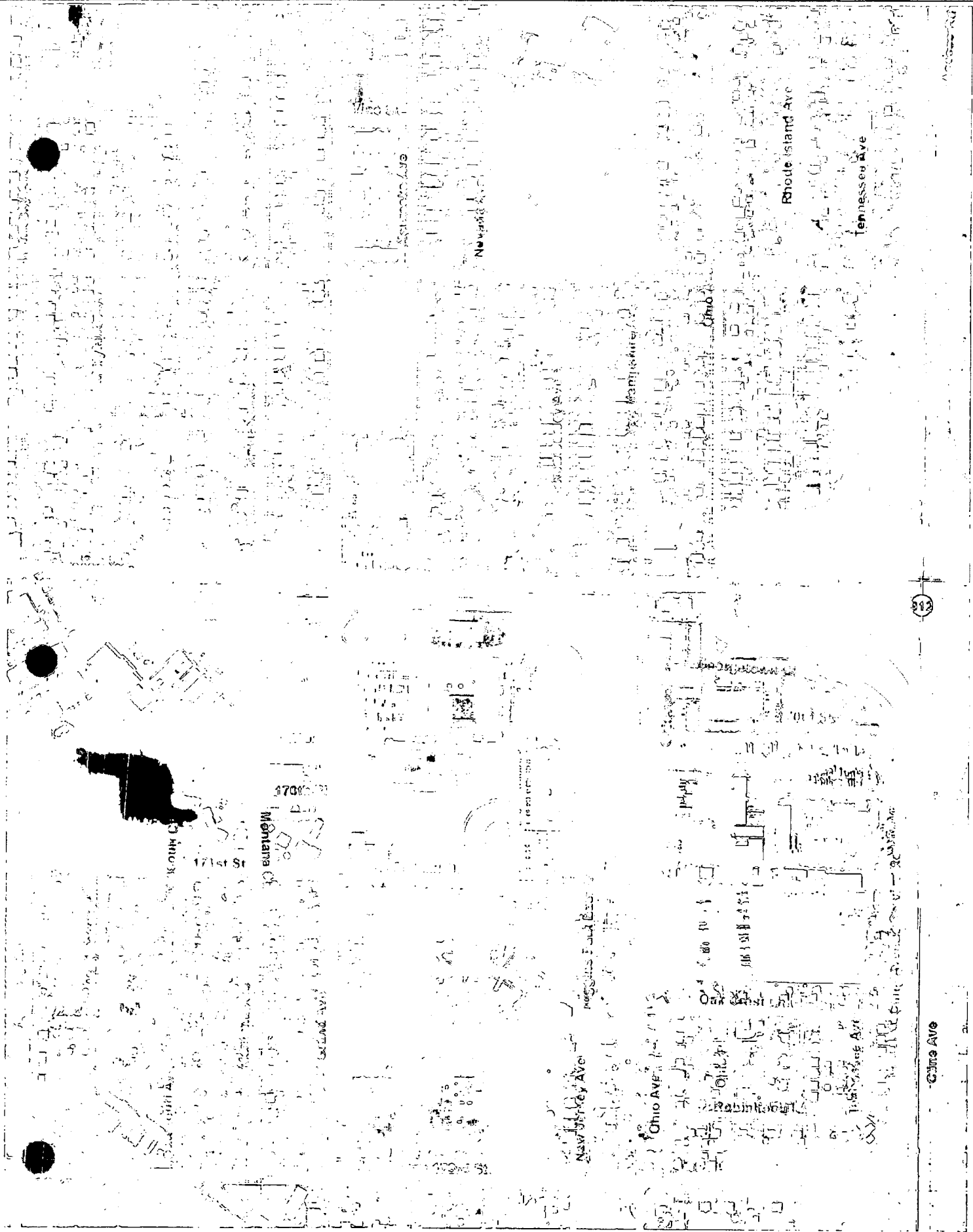




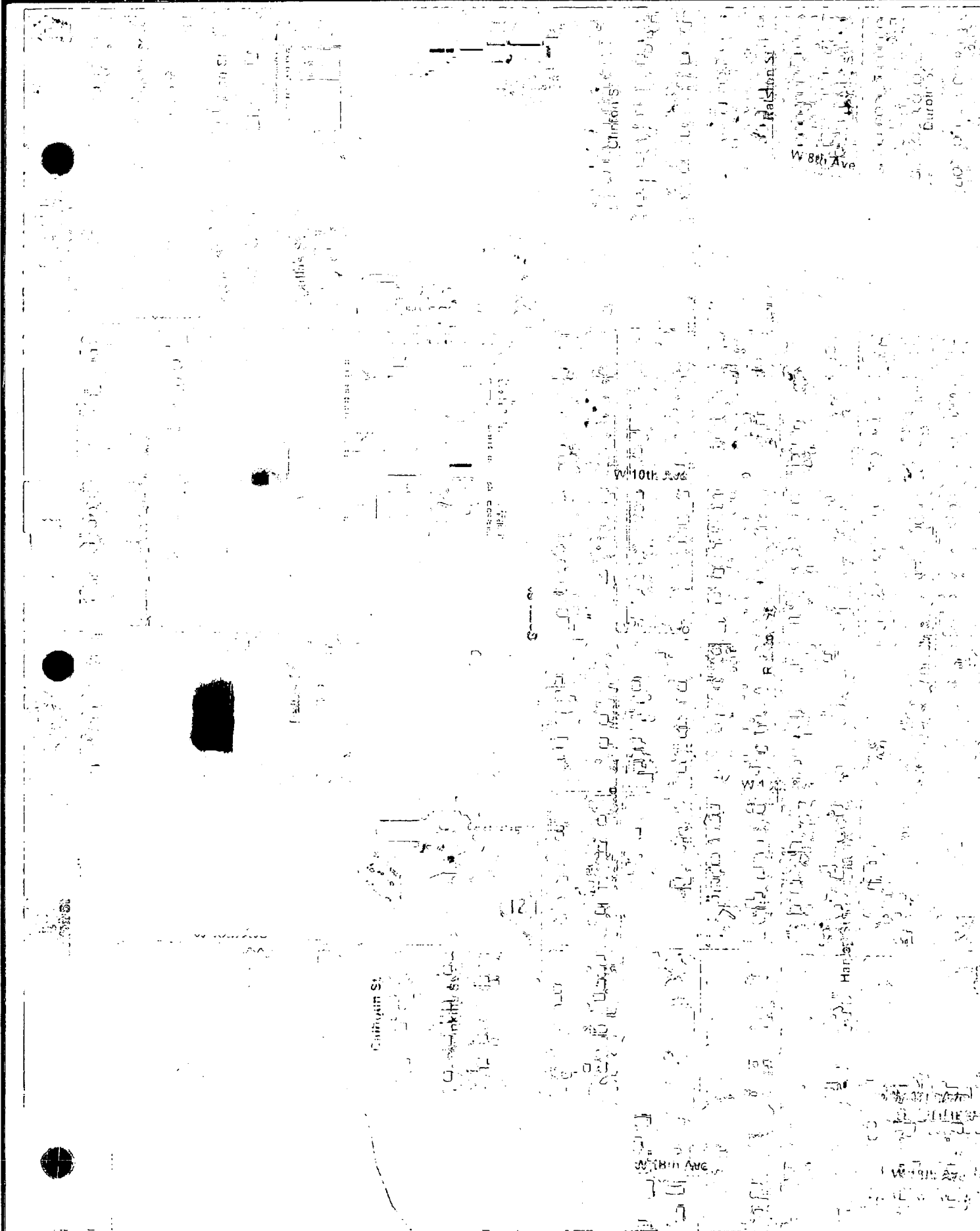
U.S. SMELTER AND LEAD RESIDENTIAL (continued)  
Background Sampling

- 11) School Athletic Field (East Chicago)  
Southwest corner of 169<sup>th</sup> Street  
and New Hampshire Avenue
- 12) School Athletic Field (Gary)  
Northwest corner of 15<sup>th</sup> Avenue  
and Gerry Street
- 13) Michael Jackson Park (Gary)  
Northeast corner of U.S. 20 West  
and Van Buren Street
- 14) Park (Gary)  
Southwest corner of 15<sup>th</sup> Avenue  
and Ellsworth Street









W 2nd Ave

Jackson St

96

Van Buren St

W 2nd Pl

(13)

Van Buren St

Jackson St

Monroe St

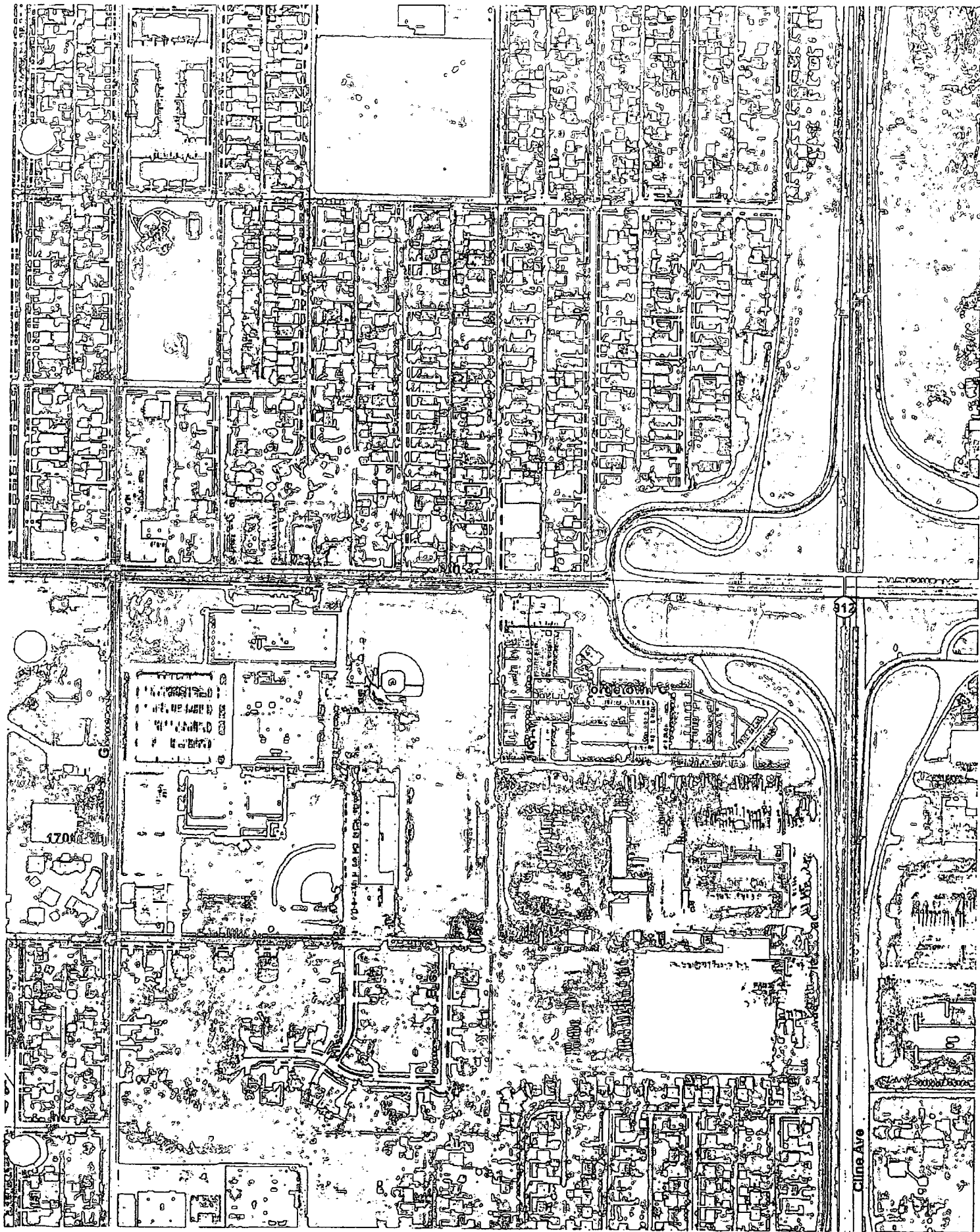
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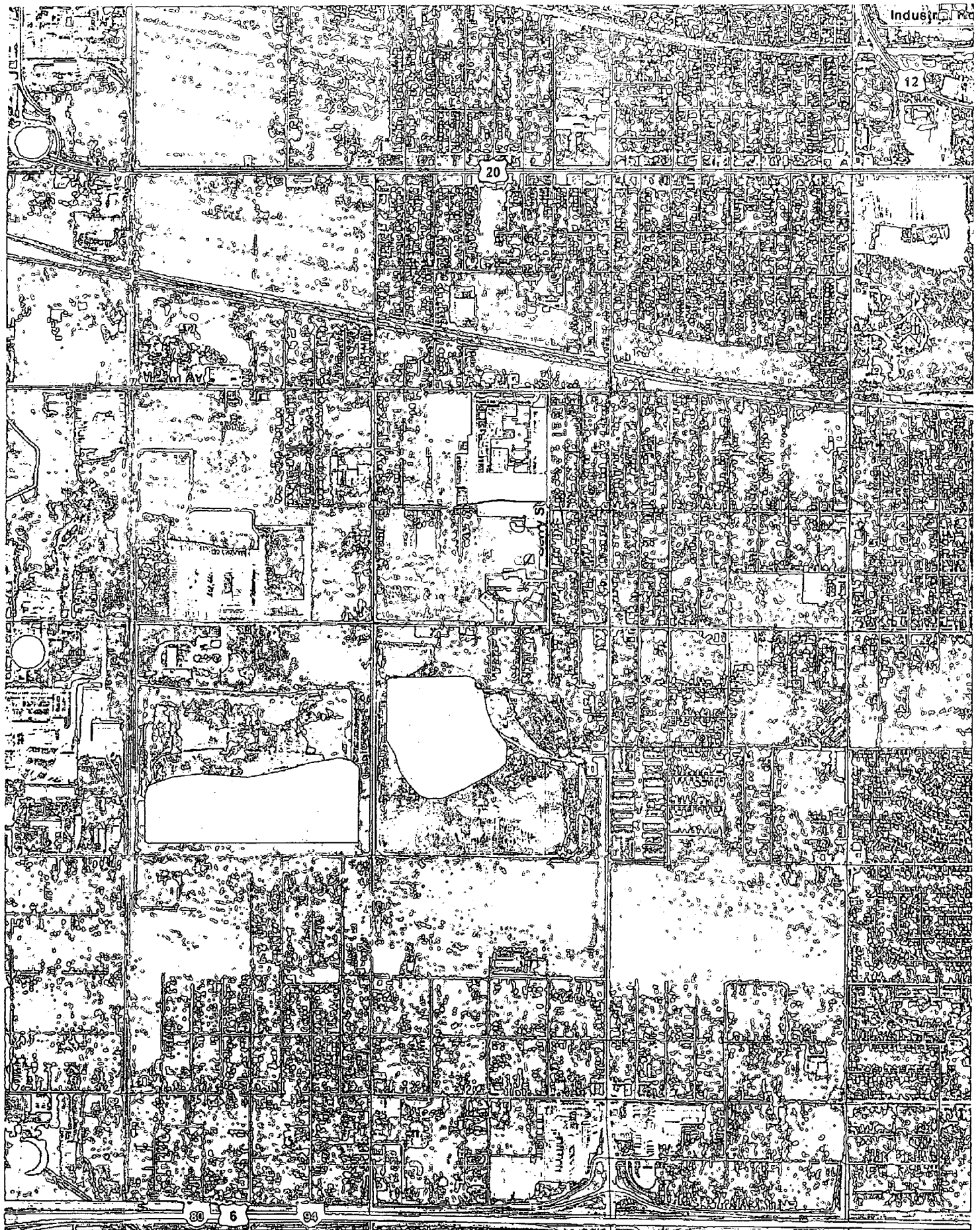
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Ellsworth Pl

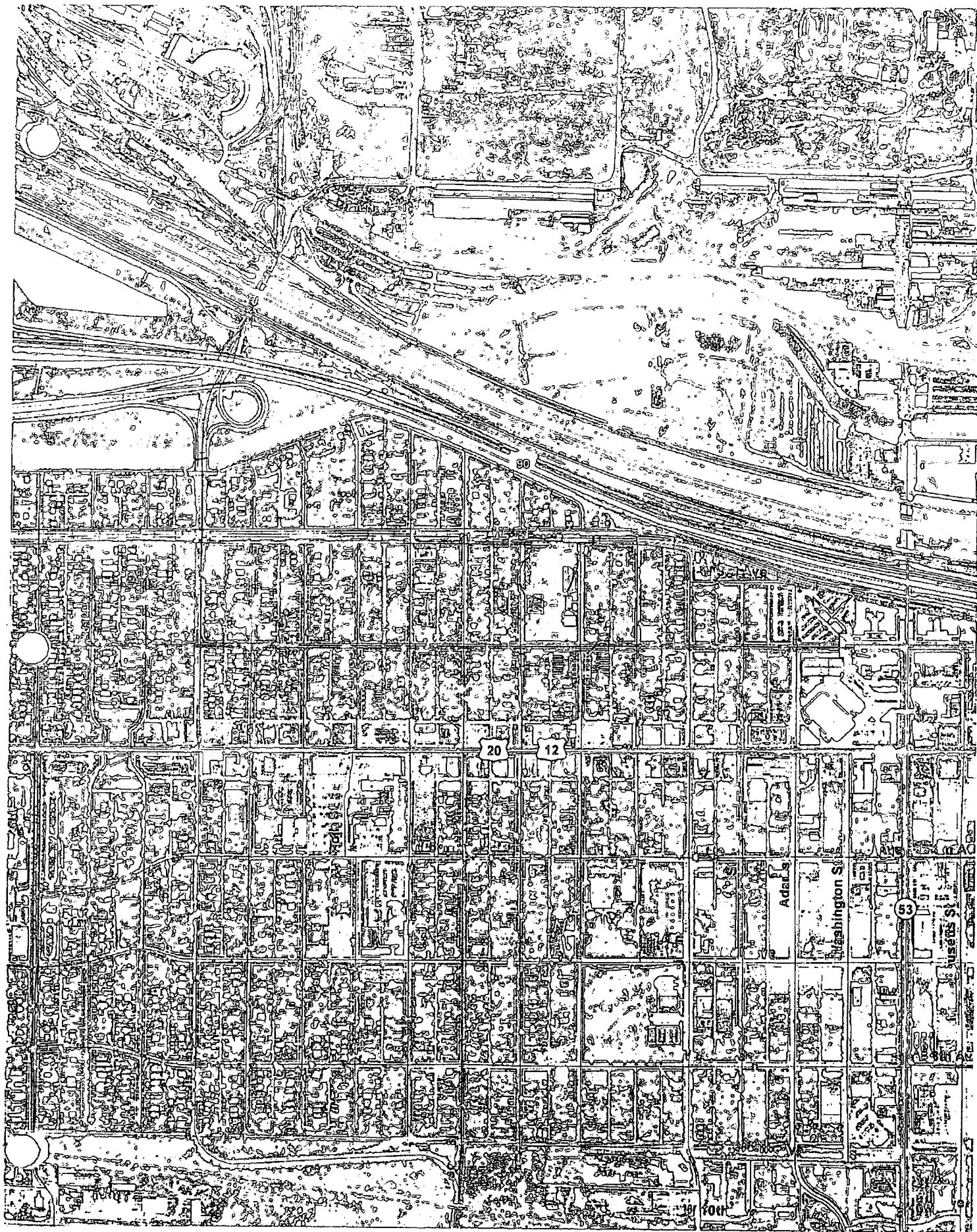
W 17th Ave

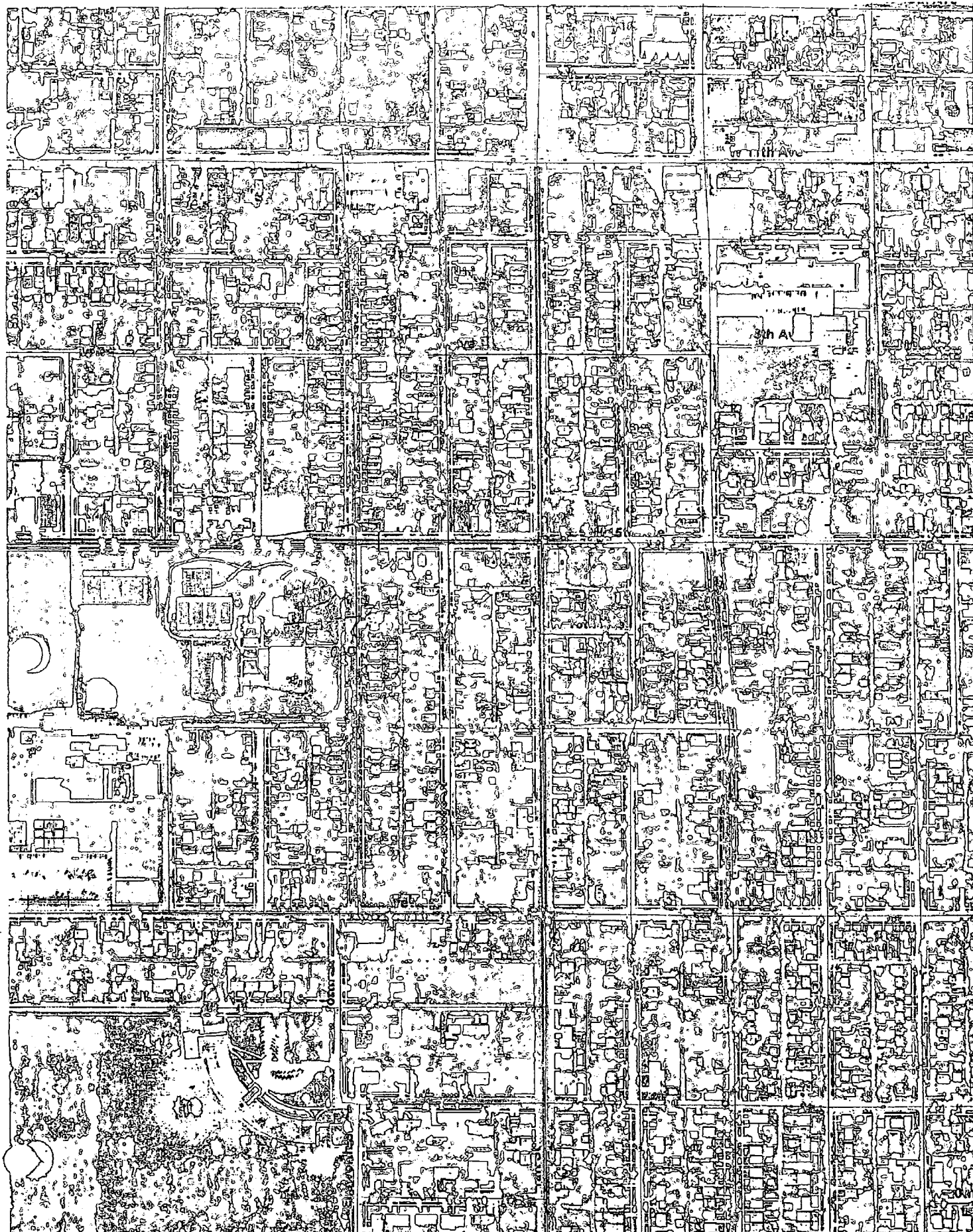
Ellsworth Pl

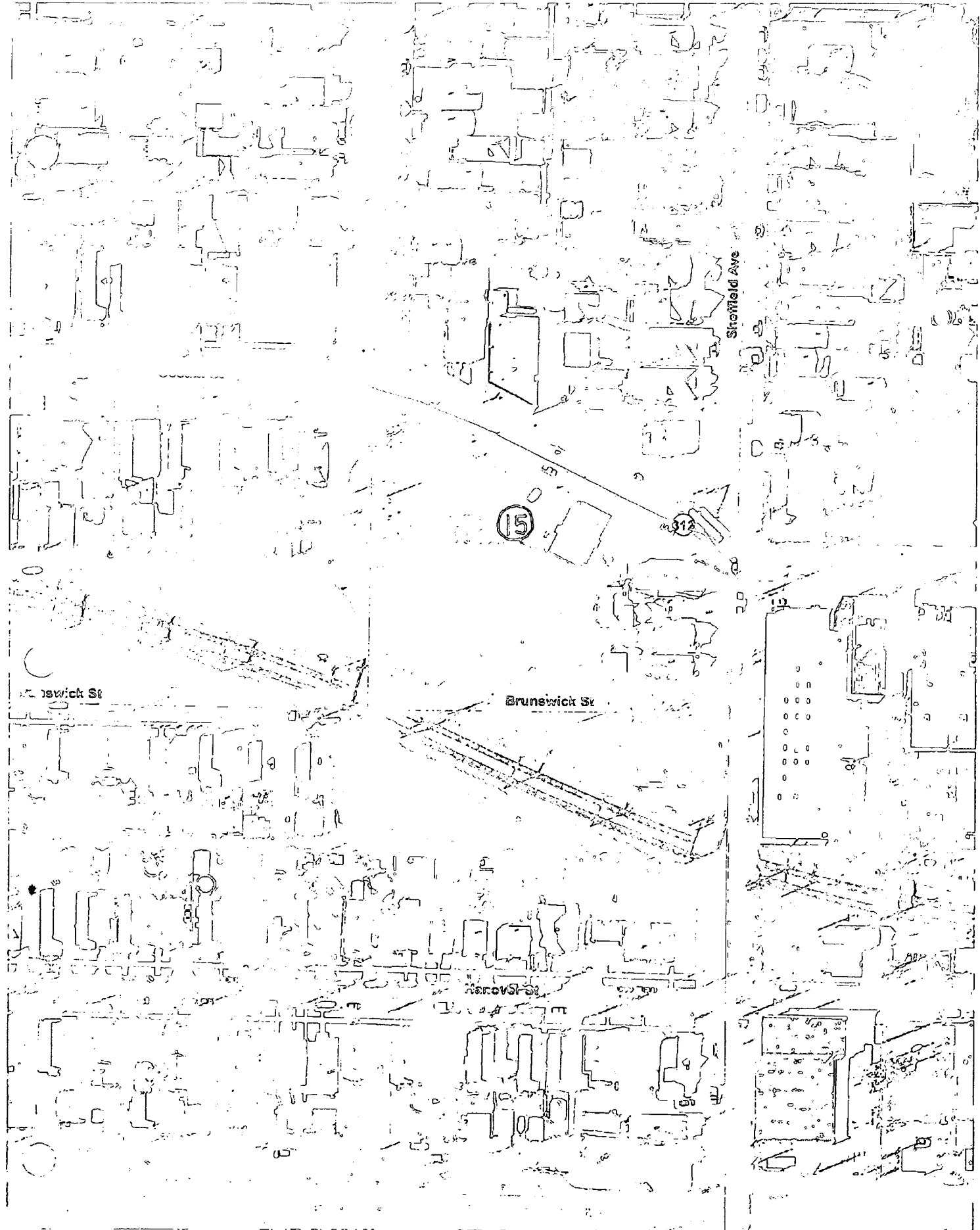




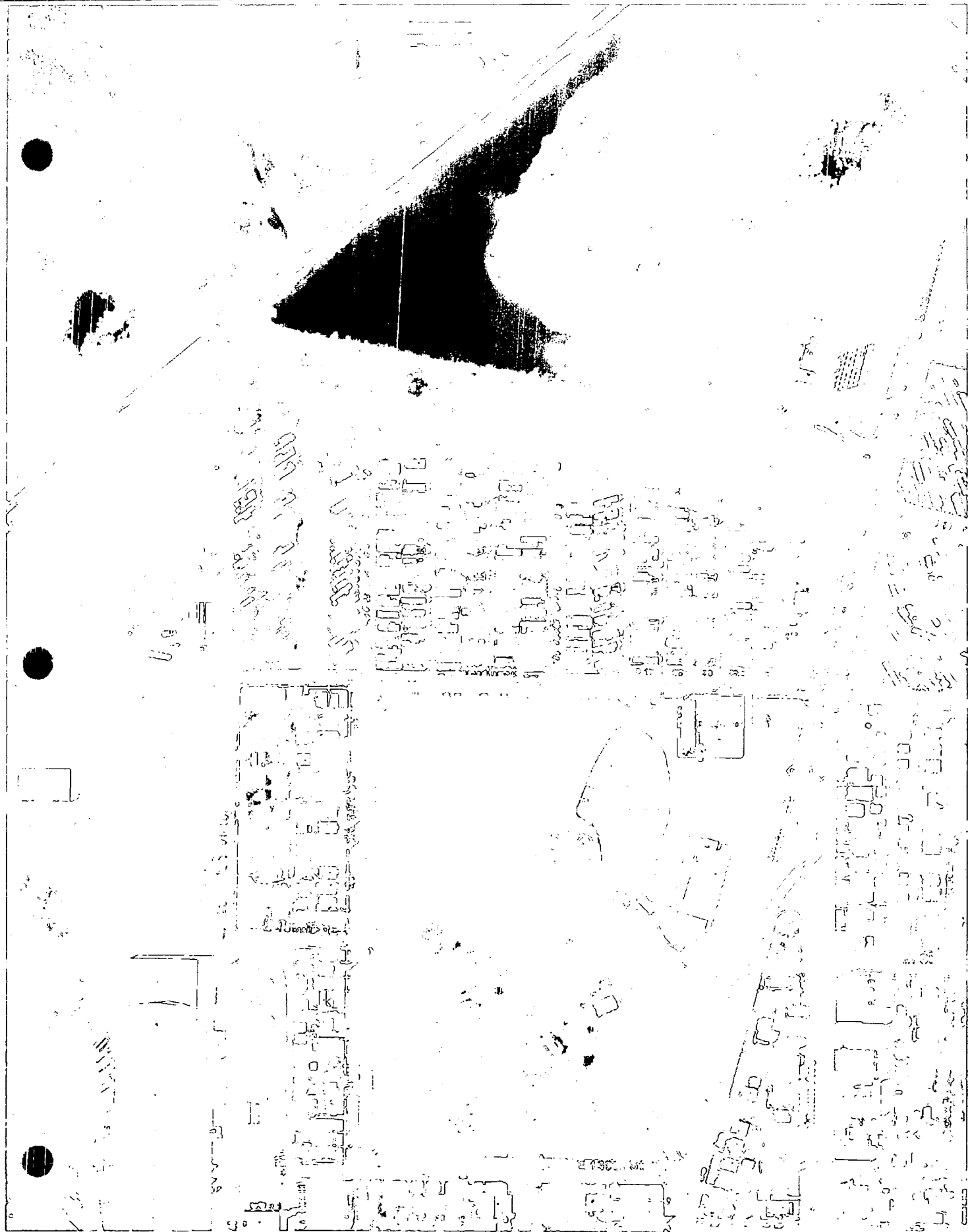


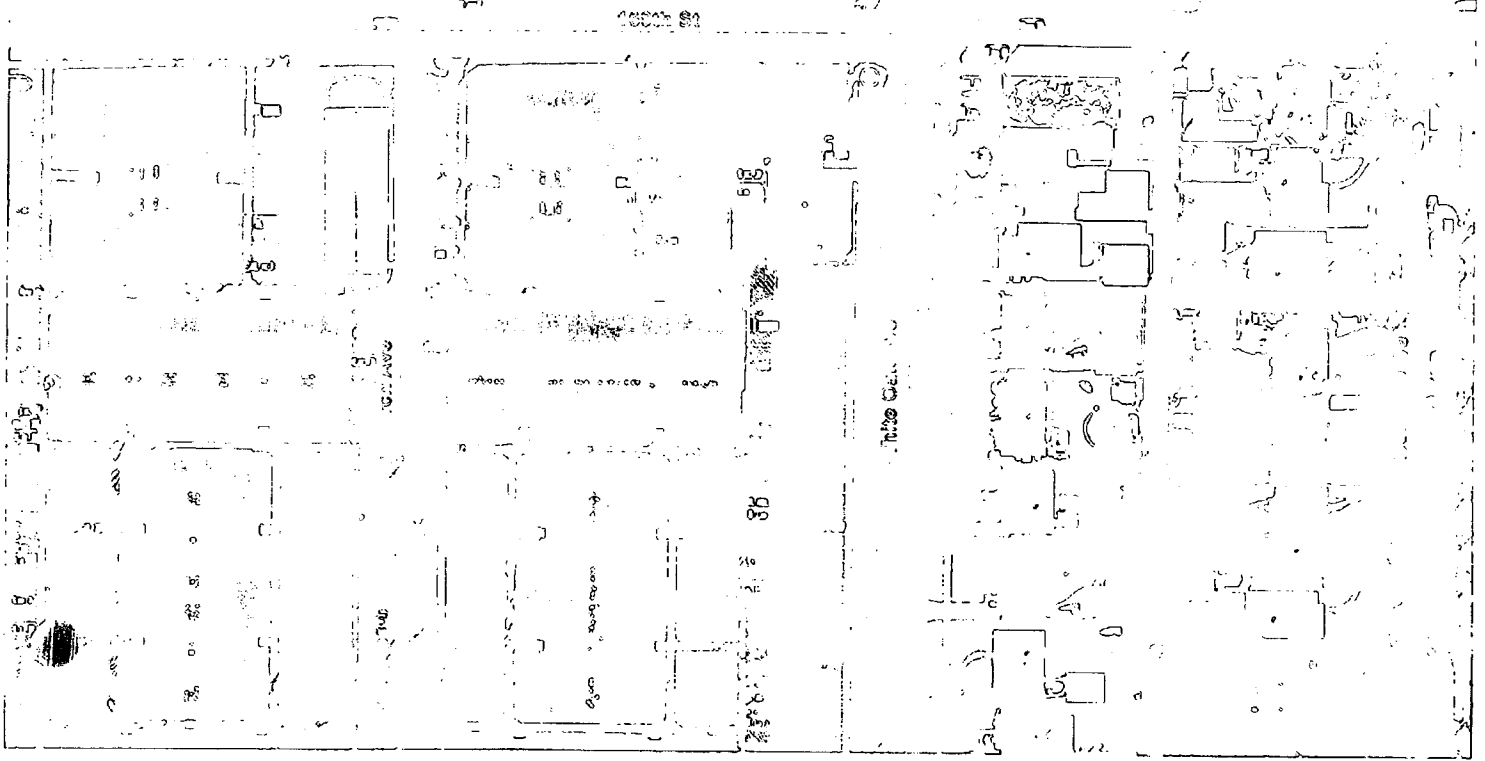








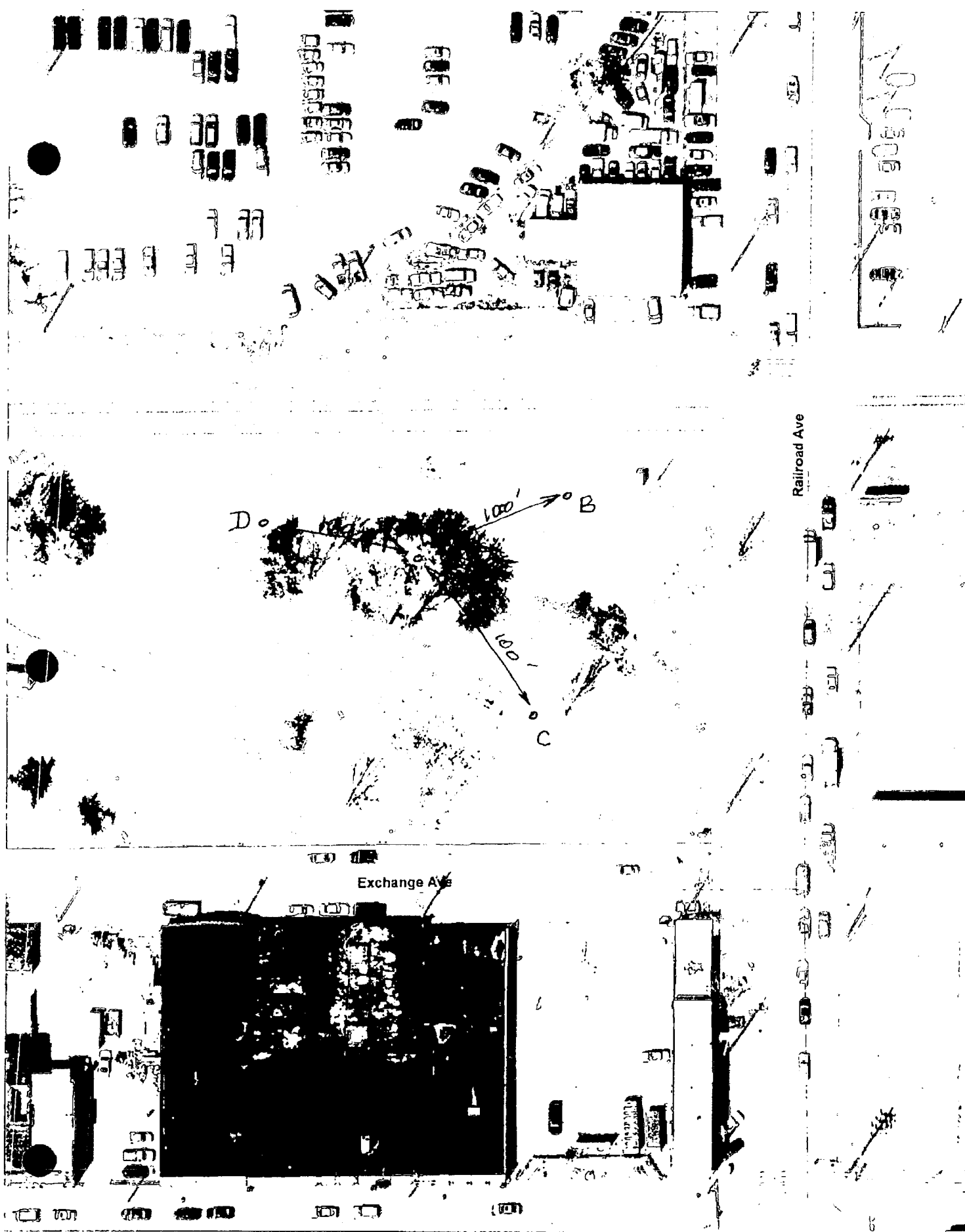






SITE #1 Variation Sampling

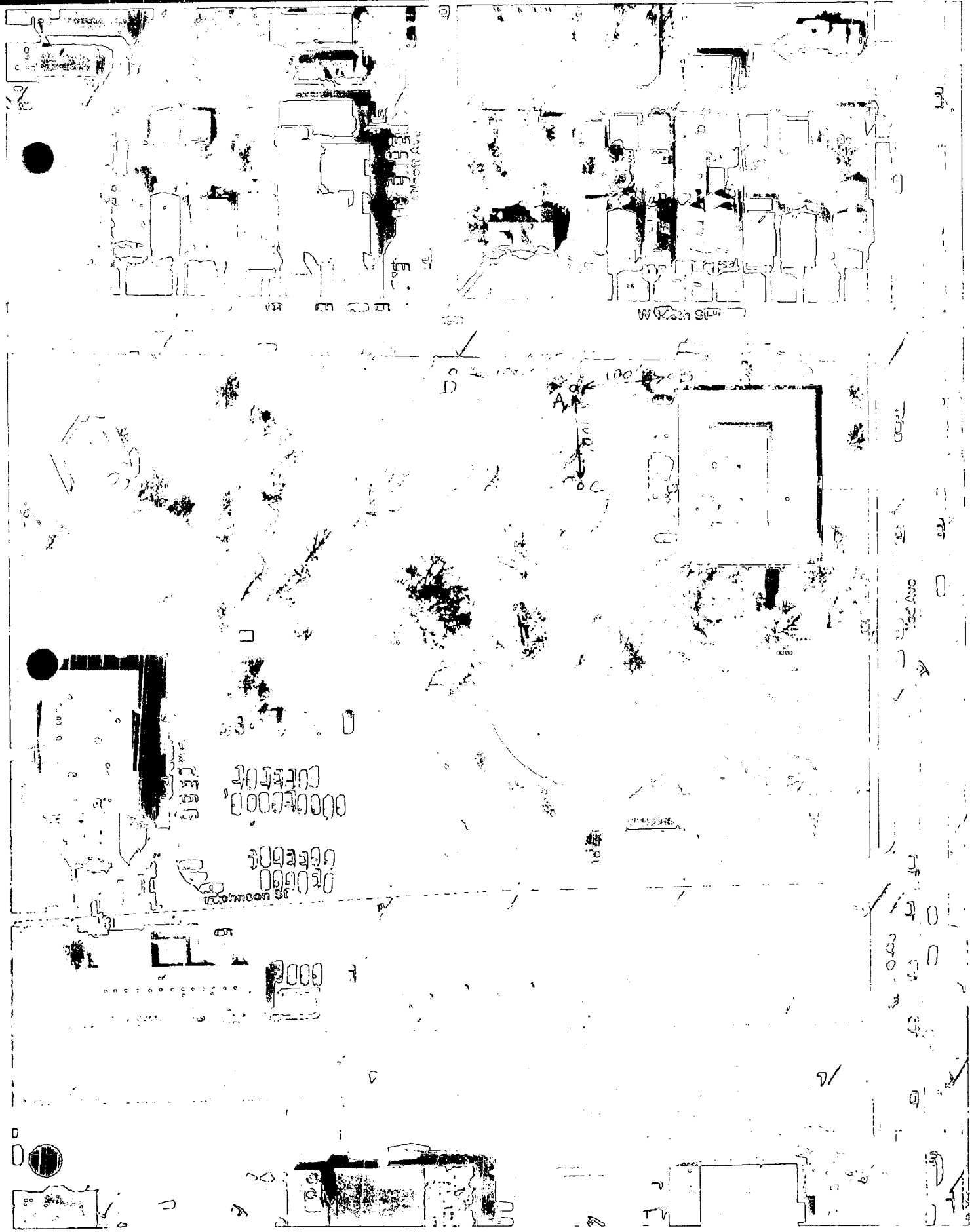
073



SITE #1A(18)

Variation Sampling

074



SITE # 4

Variation Sampling

075



SITE # 7

Variation Sampling

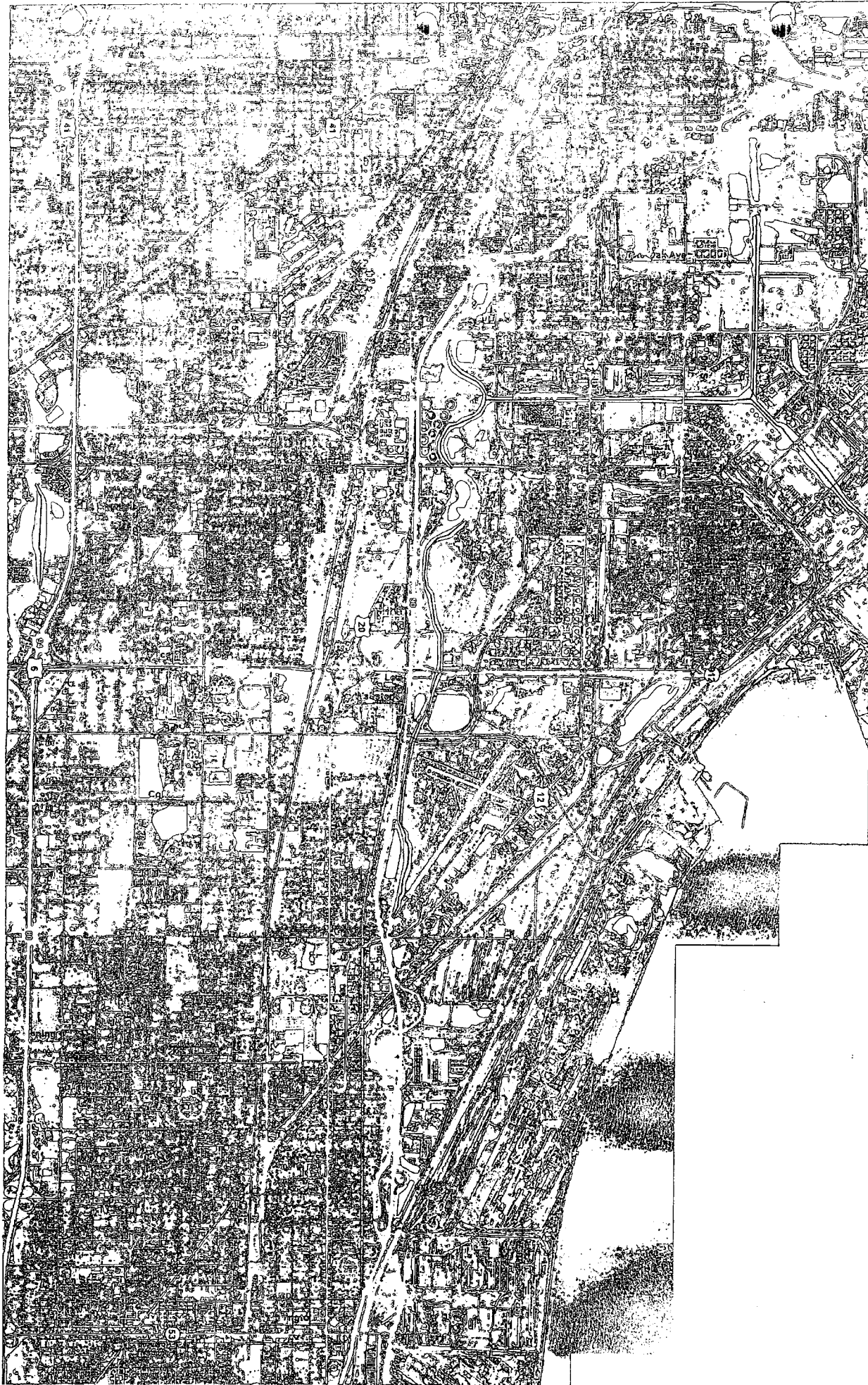
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SITE #10

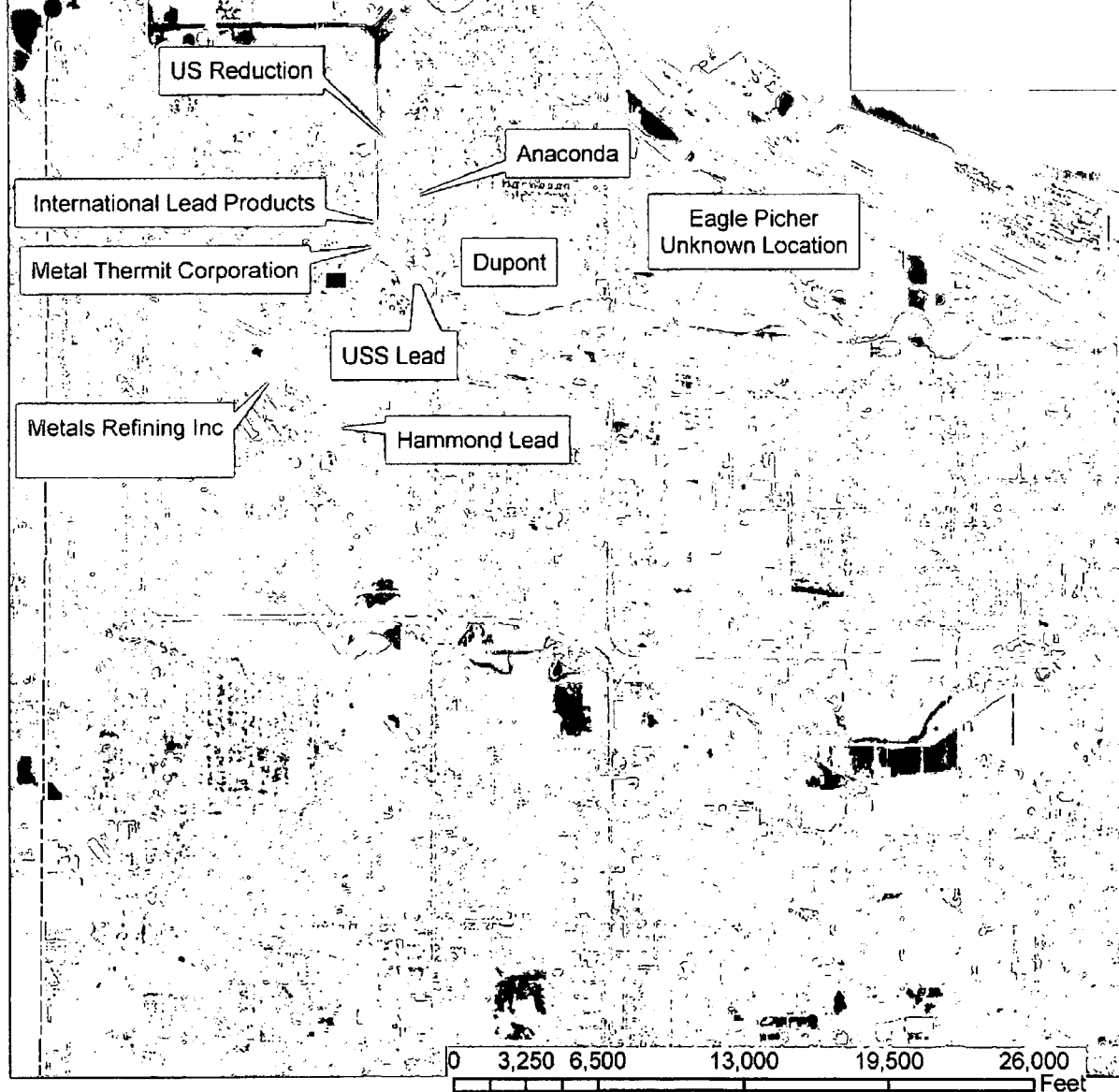
Variation Sampling

077





# Map Showing Former Facilities Suspected of Having Lead Emissions



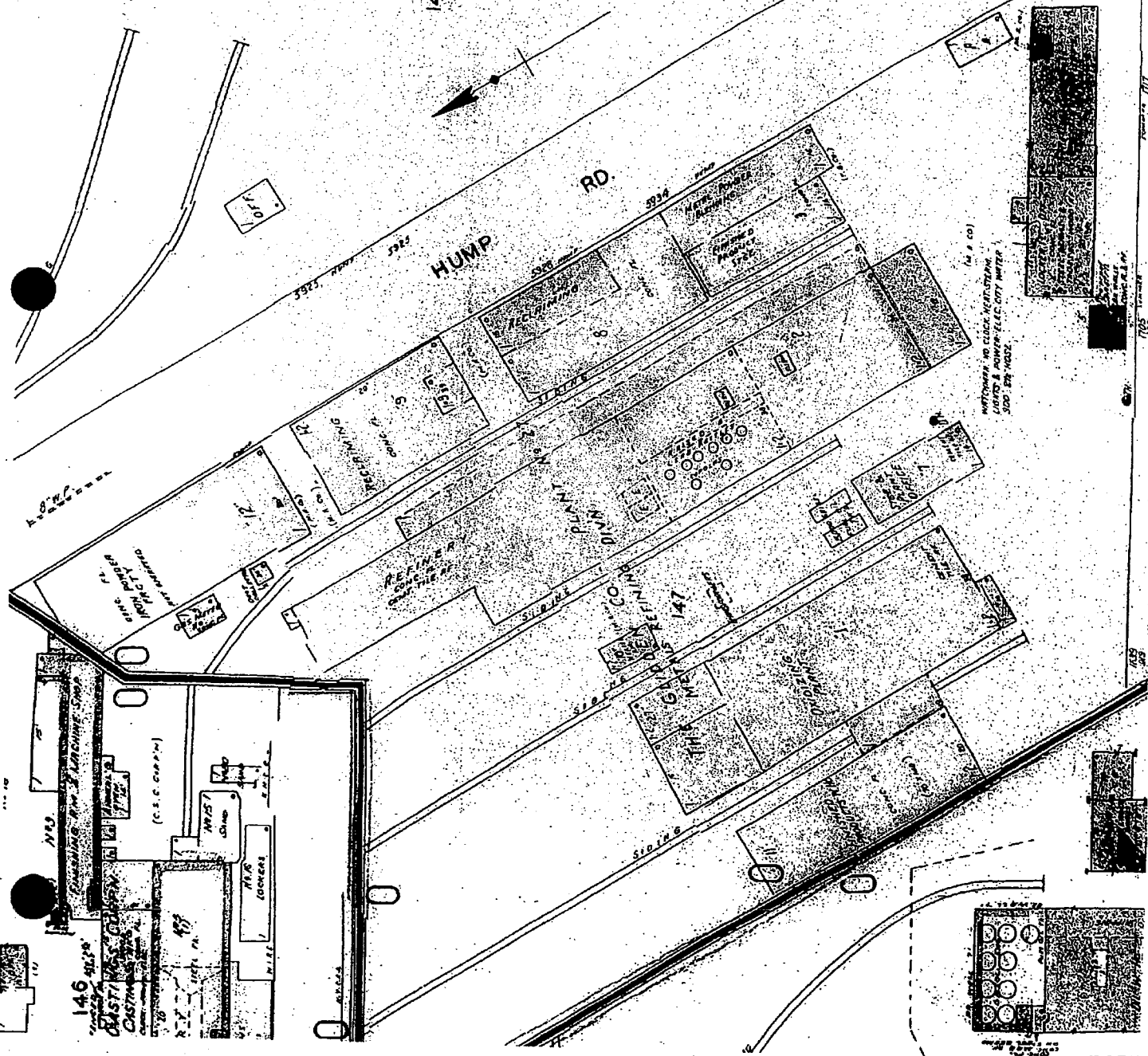
Appendix J  
Sandborn Insurance Maps

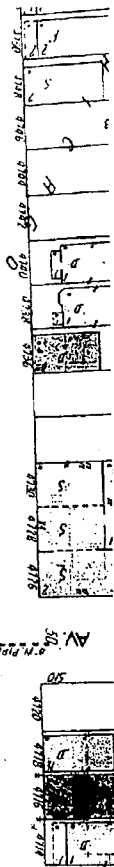


1939  
p. 305

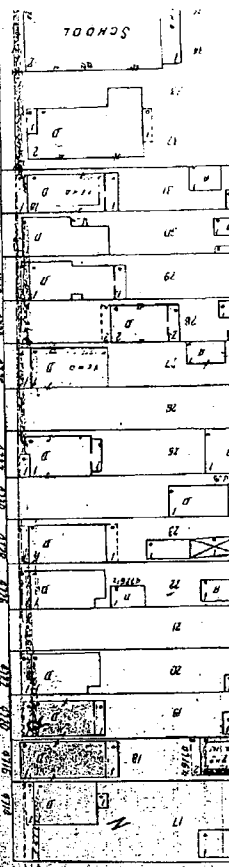
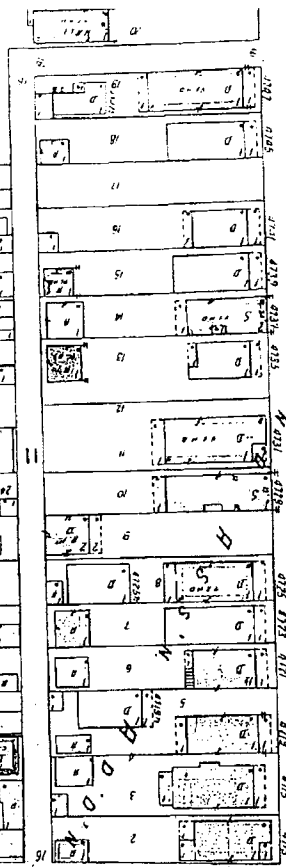
# Sanborne maps 1939

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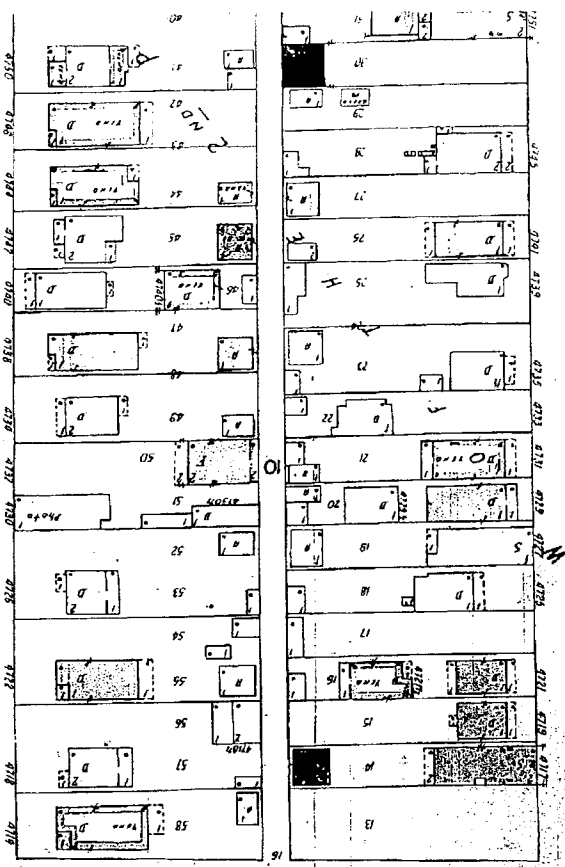




McCOOK AV

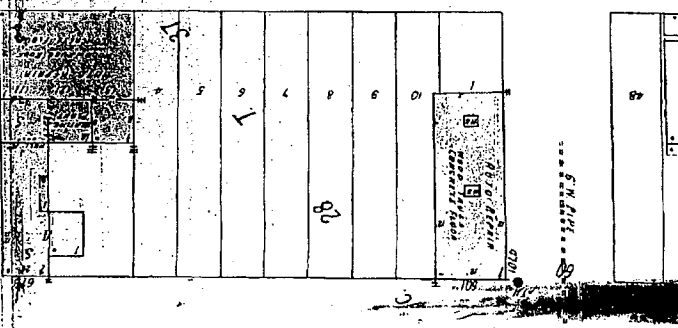


ALEXANDER AV

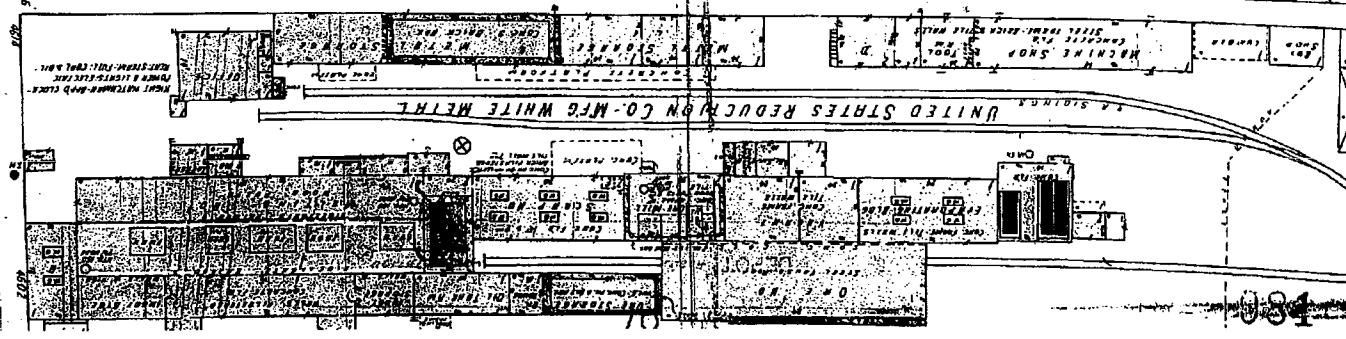
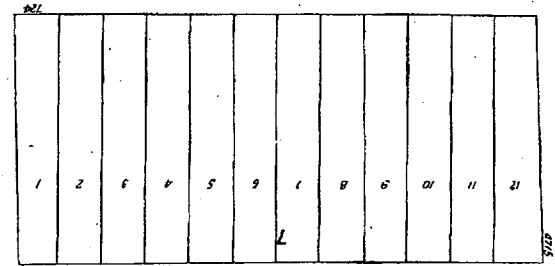
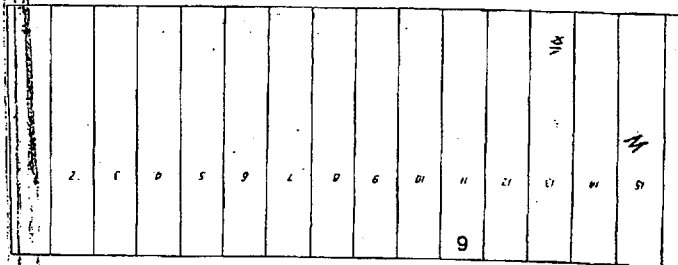
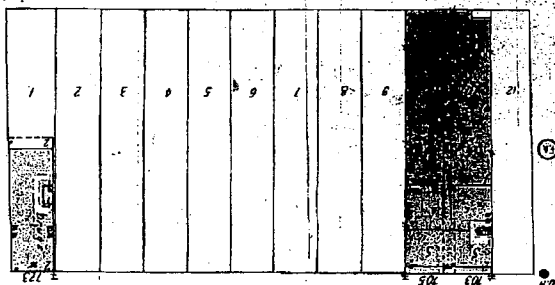


MELVILLE

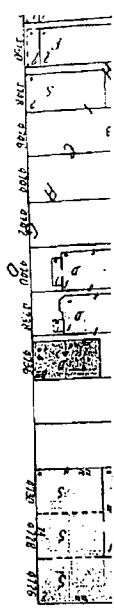
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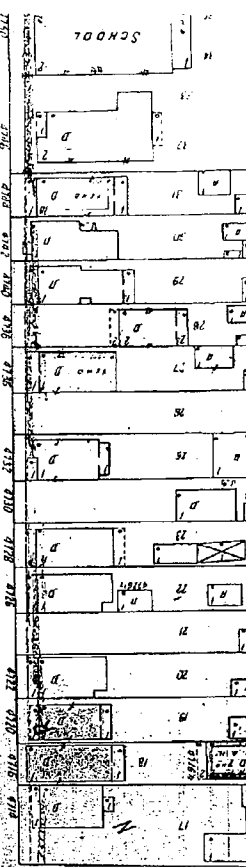
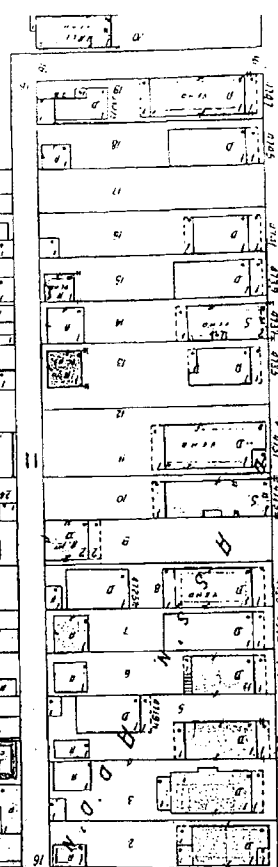
E. CHICAGO AV



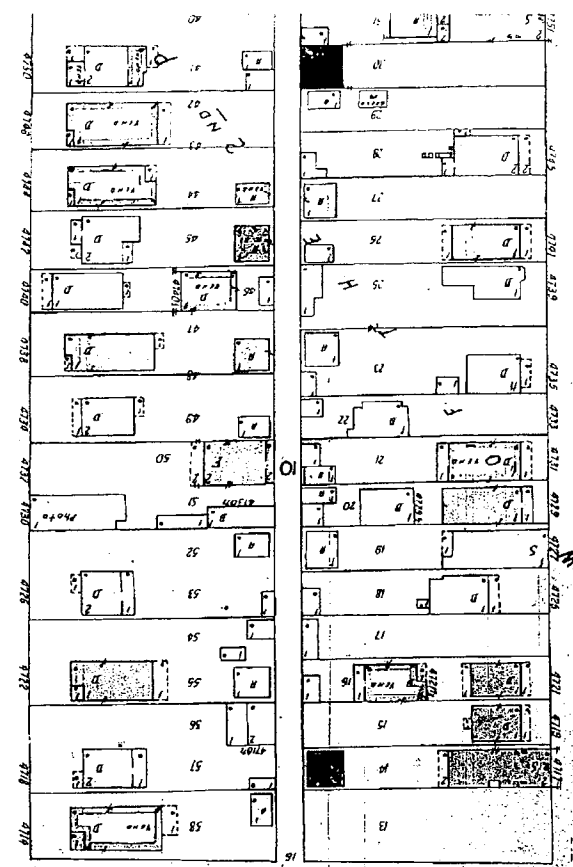
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MECOOK AV

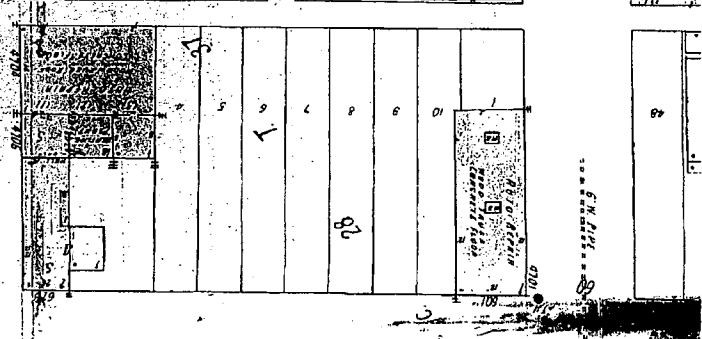


ALEXANDER AV

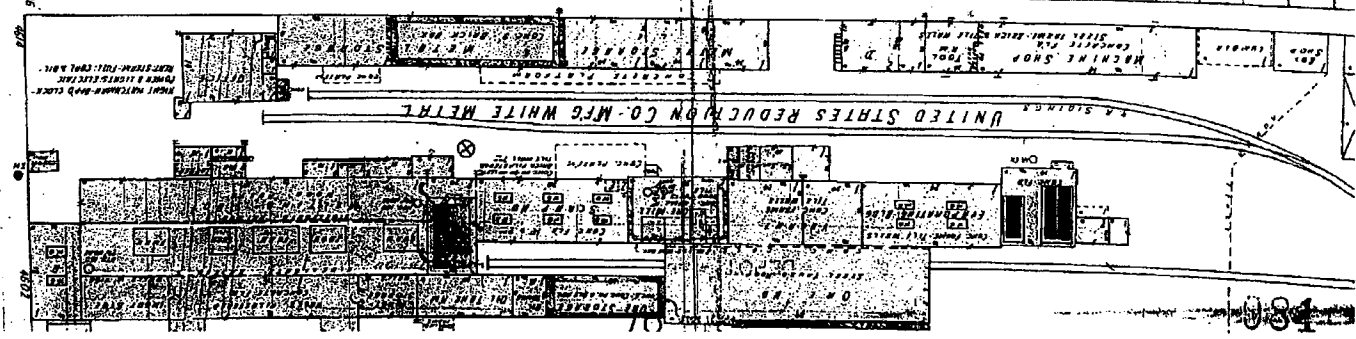
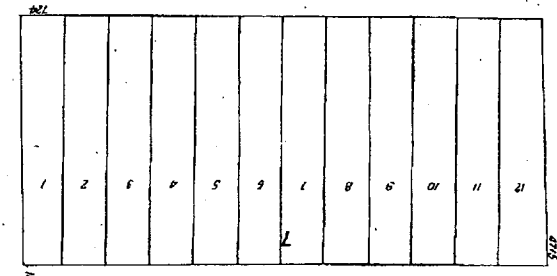
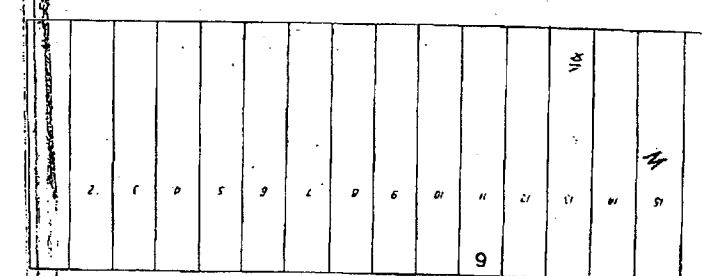
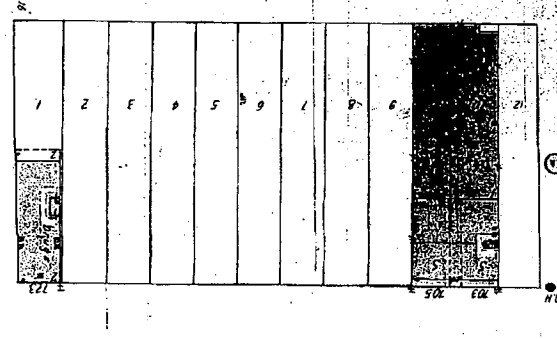


MELVILLE

76



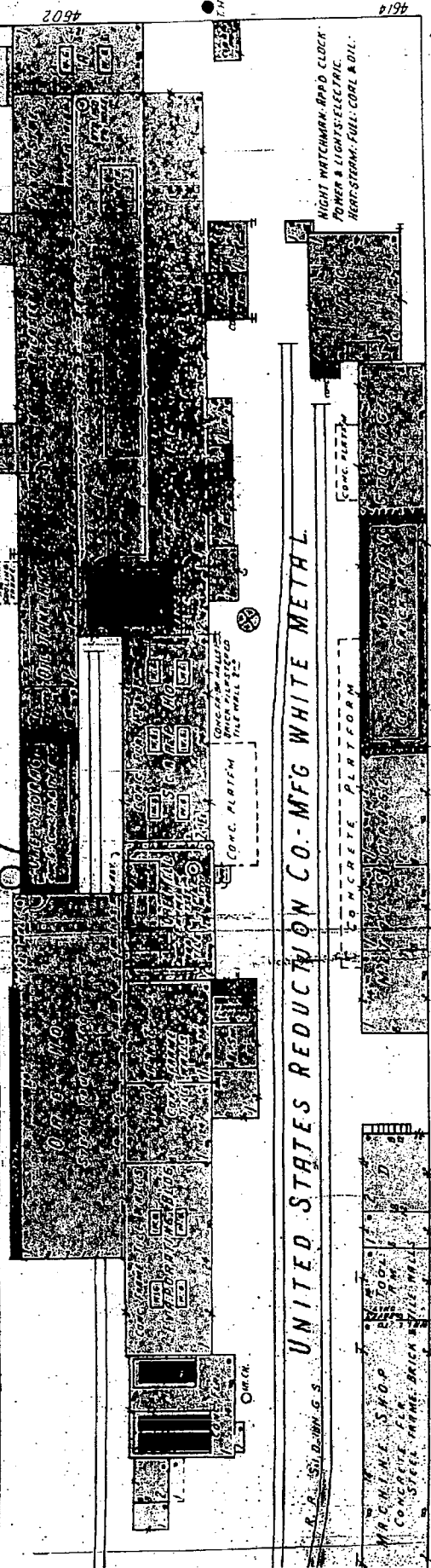
E. CHICAGO AV



084

B. E. O. C. T. R. R. BEYOND

87



UNITED STATES REDUCTION CO.-MFG WHITE METAL

6	11	10	9	8	7	6	5	4	3	2
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12	11	10	9	8	7	6	5	4	3	2	1
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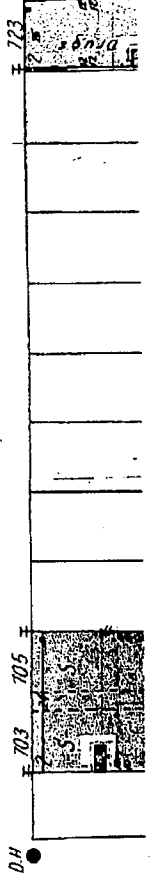
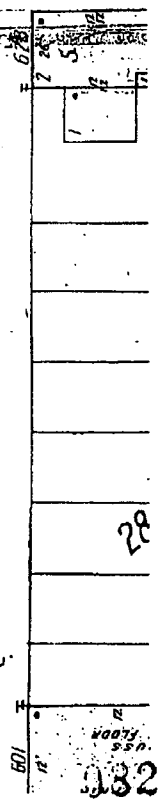
NOT OPENED

E. CHICAGO AV.

S

E

C.



16" W. PIPE

182

28

1930  
Sawyer  
US Reclamation Dept





1930  
Sandborn  
Key Map





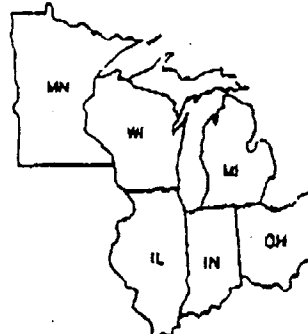
United States Environmental Protection Agency

Region V

77 West Jackson Boulevard  
Chicago, Illinois 60604

Superfund Division

Facsimile Cover Sheet  
Telephone Number  
312-886-4071



To: Mark Jaworski

Office phone: 317-233-2407 Machine No: 317-234-0428

From: Laura Ripley

Office phone: 312-886-6040 Mail code: SR-6J

Date: 8/13/2007

Number of pages, including cover: a lot

Message: Appendix J USS Lead

I copied both front & back

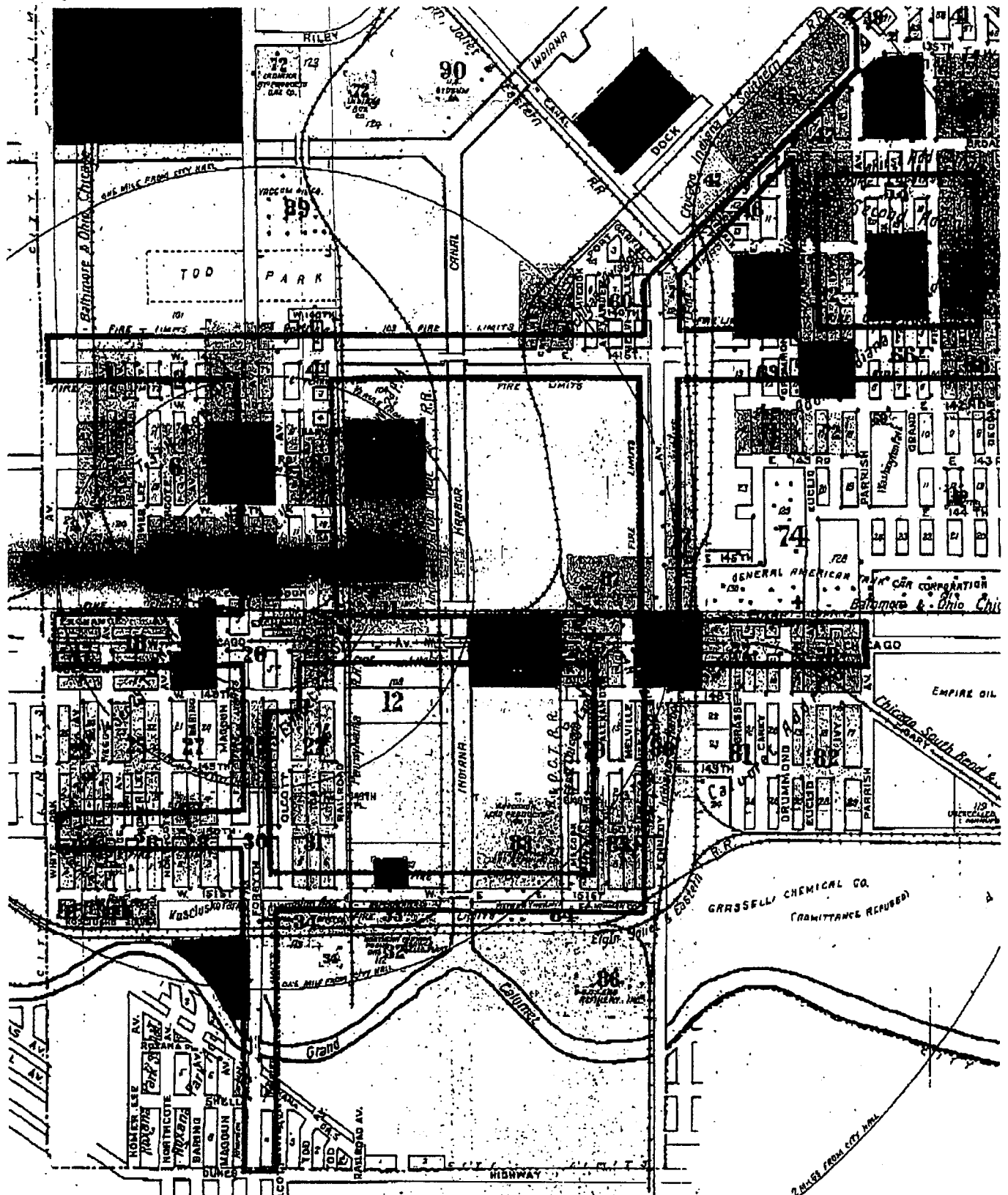
Signature: L. Ripley

Appendix J

Sandborn Insurance Maps

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Make copies Sanborns  
FAX to Mark



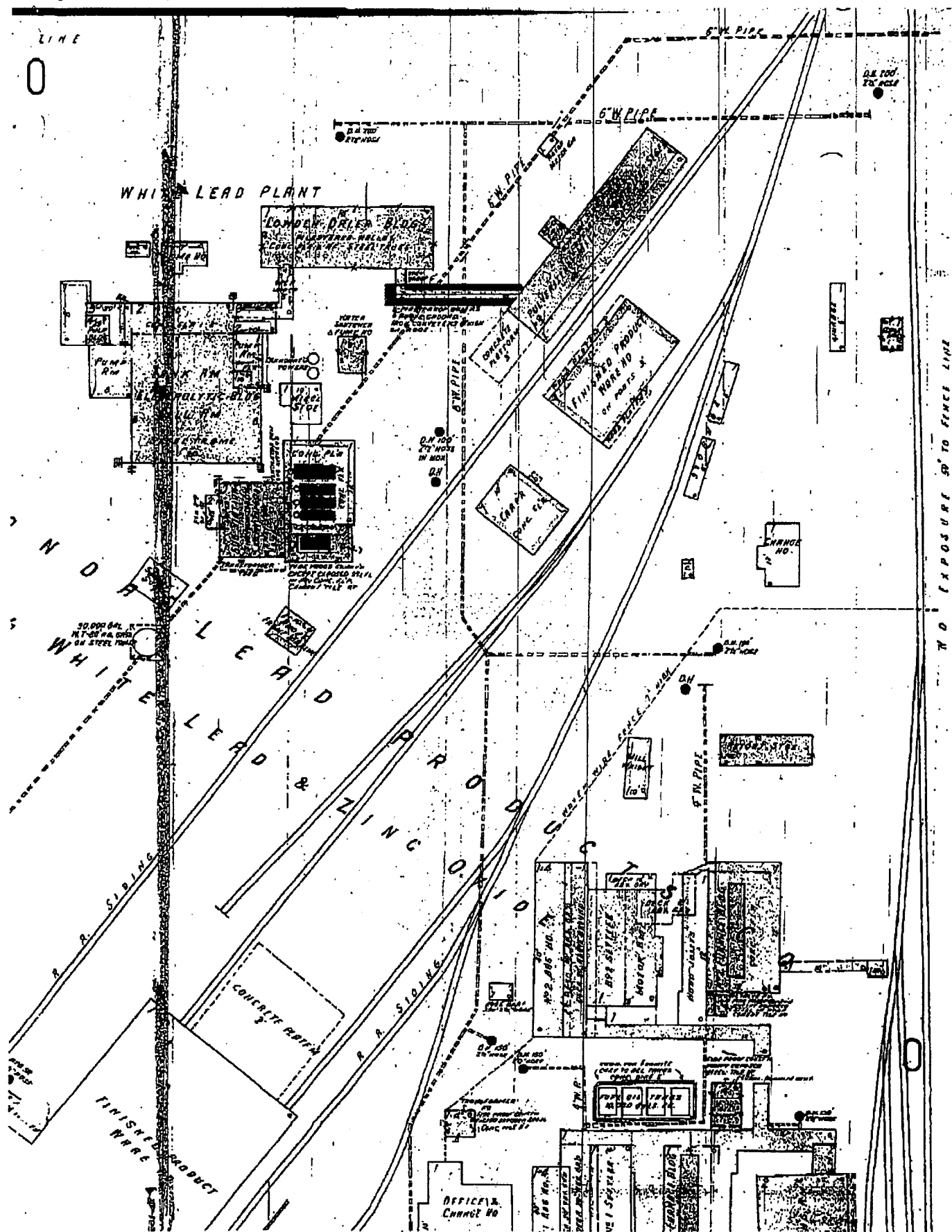
SEE MAP OF HAMMOND, IND. VOL

Aug-13-2007 02:01pm From-

T-328 P.005

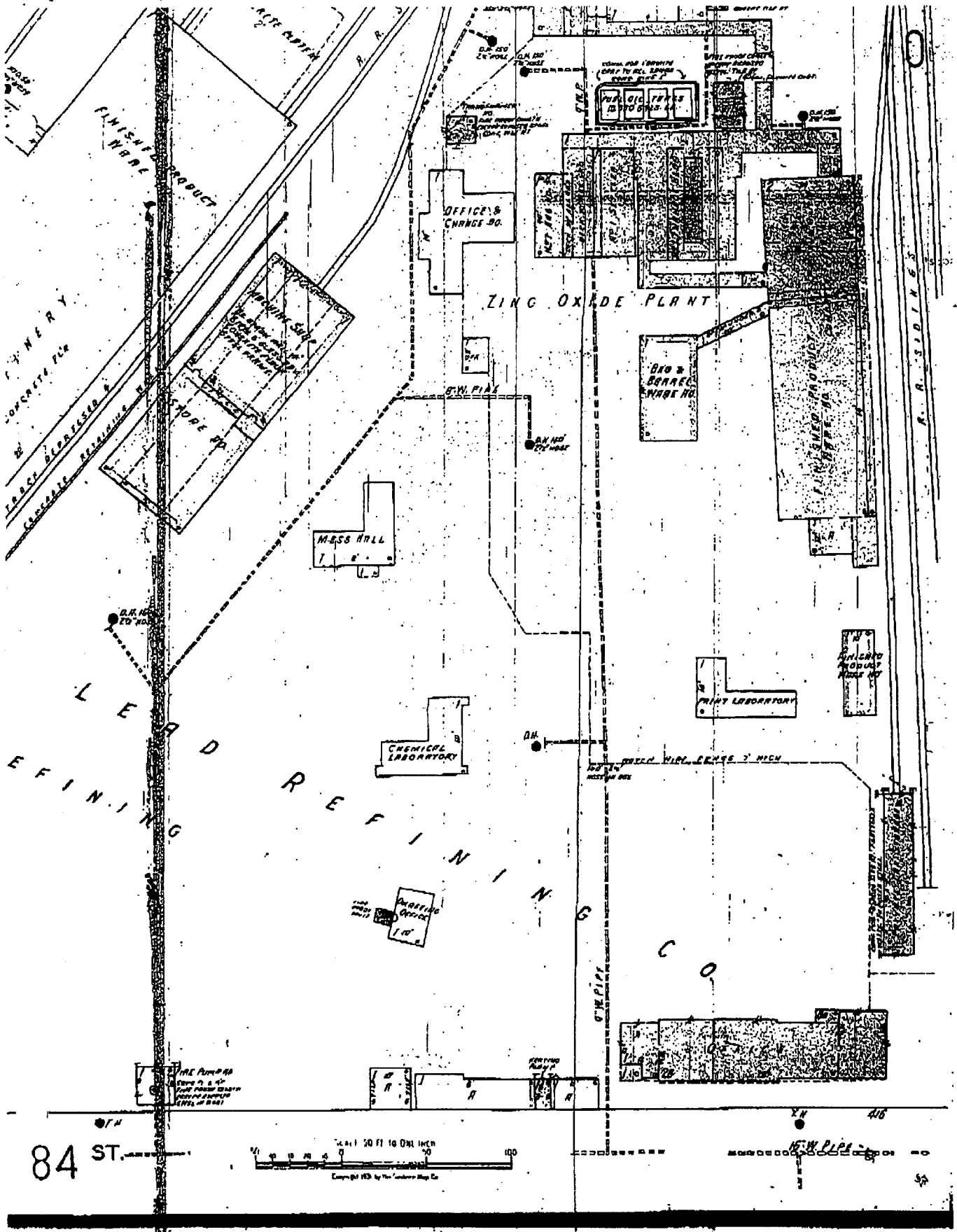
F-602

1750  
Sandborn Hef  
East Chicago

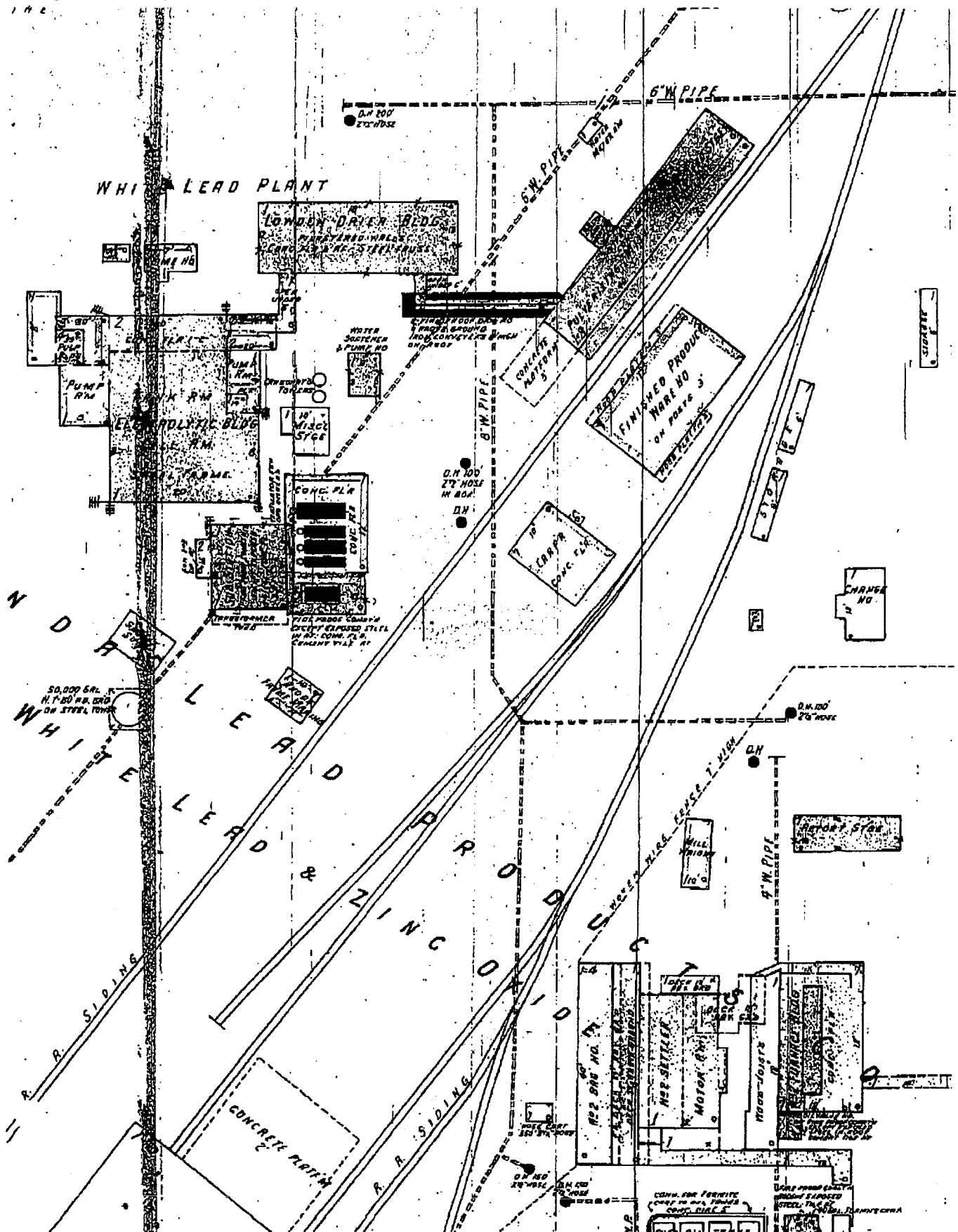




1930500000  
Hawkeye



1990  
Gardner  
Aurora



Sondleru  
1930

Anaconda

EAST CHICAGO, IND.

83

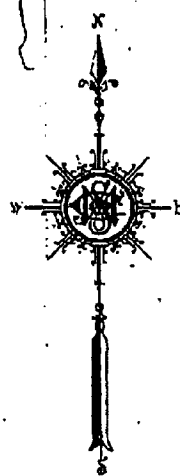
(10-136)

NO EXPOSURE 70' TO NORTH FENCE LINE

0

2. HUNT, R. SUNDAY, HAZARD, R. P. R. T. D. I. C. I. G. E. P. M. S.

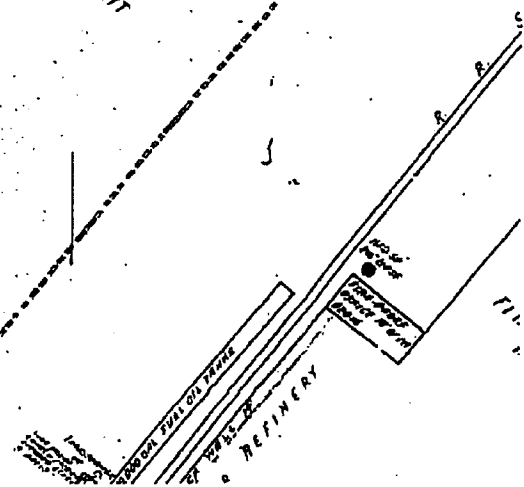
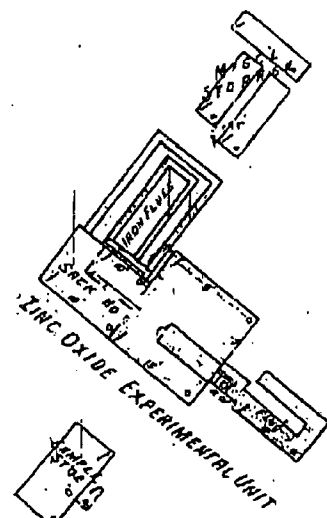
1. 6 IN. CITY CORN 1-300000000. TANK ELEVATED 10' &  
1-500000000. TANK ELEVATED 20' TANK CAPTAIN: HIGH PRESSURE  
SYSTEM WAS 1-0 CITY CORN 10 500000000. CENTRAL  
TANK PUMP, CHFCY: 1000 G P.M. AT 100 LBS.



ANACONDA

MFG

WHI



1450  
Sandborn  
Anacapa





1970  
Sandborn



1990 Anacard  
Saulson



Sandborn map

1930

Area S. of 151

Metal + T. Hermit Corp.

Area 4

Appendix K

Findings of Historical Aerial Photographs of Potential Facilities

### Anaconda

- 1) Aerial flown 10-31-38, Plates BFJ-1-58 and BFJ-1-57:
  - Anaconda buildings are present
- 2) Aerial flown 9-12-58, Plate BFJ-2V-92:
  - Buildings are present however, facility activity appears to have grown toward the northern extent of the property
- 3) Aerial flown 7-15-65, Plate BFJ- 1FF-52:
  - Buildings are present.
- 4) Aerial flown 9-6-73, Plate 173-109:
  - An apartment complex is now present on the property

### Metal Thermit Corporation

- 1) Aerial flown 10-31-38, Plates BFJ-1-58 and BFJ-1-5:
  - Metal Thermit Corp. plant buildings are present in the area.
- 2) Aerial flown 9-12-58, Plate BFJ-2V-92:
  - The buildings are still present in the area.
- 3) Aerial flown 7-15-65, Plate BFJ- 1FF-52:
  - The buildings are still present in the area.

### Metals Refining

- 1) Aerial photo flown 10-31-38, Plate BFJ-1-59:
  - The Metals Refining plant building is present in the area.
- 2) Aerial photo flown 9-12-58, Plate BFJ-2V-109:
  - The plant building is still present in the area.
- 3) Aerial photo flown 7-14-65, Plate BFJ-1FF-53:
  - The plant building is still present in the area.

### Hammond Lead

- 1) Aerial photo flown 10-31-38, Plate BFJ-1-59:
  - There are no buildings present in this area.
- 2) Aerial photo flown 9-12-58, Plate BFJ- 2V-109:
  - The Hammond Lead building is present.
- 3) Aerial photo flown 7-14-65, Plate BFJ-1FF-53:
  - The plant building is still present.

**Metal and Thermit Corporation**

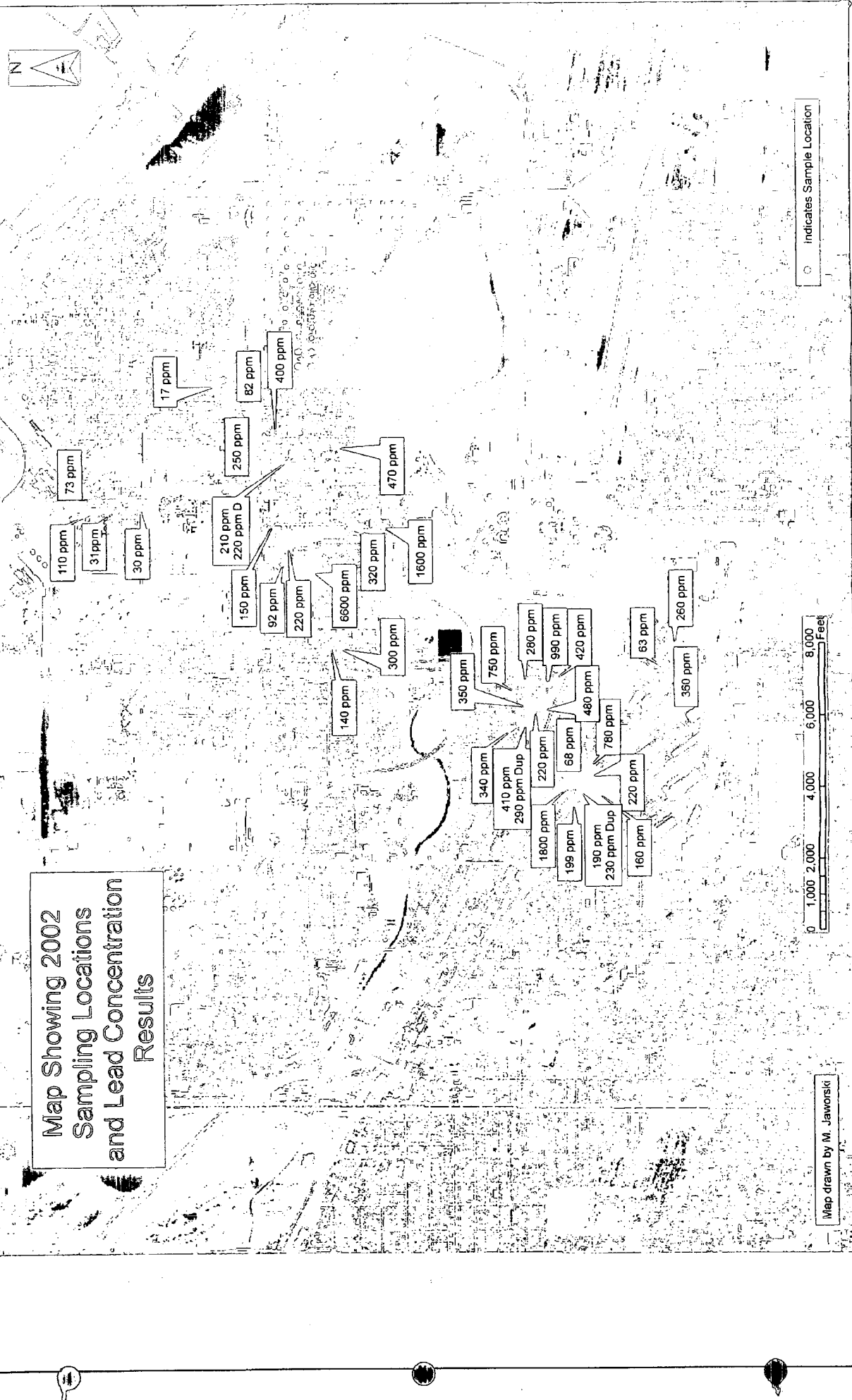
According to 1930 Sanborn maps, the Metal and Thermit Corporation operated a detinning plant. The facility consisted of a smelter, a general laboratory, raw materials room, a general repair shop, an engine room, offices, and other miscellaneous buildings and processing areas. No other historical information was found.



Appendix L

Previous Sample Location and Lead Results Map

Map Showing 2002  
Sampling Locations  
and Lead Concentration  
Results



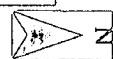
○ Indicates Sample Location

0 1,000 2,000 4,000 6,000 8,000 Feet

Map drawn by M. Jaworski

Appendix M  
Surrounding IDEM Facilities Map

# Map Showing Surrounding IDEM Addressed Facilities located near Potential Background Sample Locations Areas to USS Lead

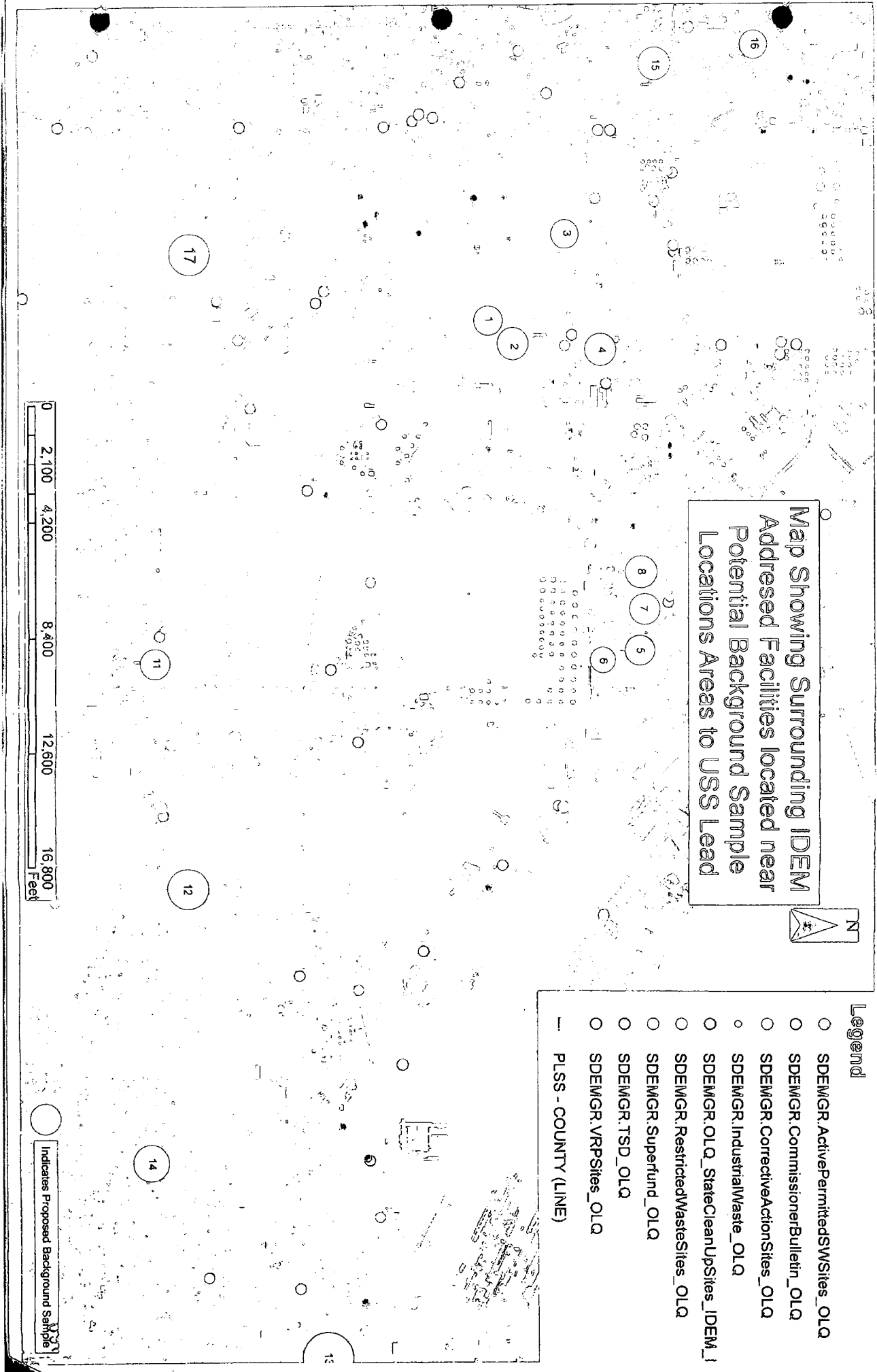


## Legend

- SDEMGR.ActivePermittedWSites\_OLQ
- SDEMGR.CommissionerBulletin\_OLQ
- SDEMGR.CorrectiveActionSites\_OLQ
- SDEMGR.IndustrialWaste\_OLQ
- SDEMGR.OLQ\_StateCleanUpSites\_IDEM\_I
- SDEMGR.RestrictedWasteSites\_OLQ
- SDEMGR.Superfund\_OLQ
- SDEMGR.TSD\_OLQ
- SDEMGR.VRPSites\_OLQ
- PLSS - COUNTY (LINE)



Indicates Proposed Background Sample



Draft – 8/8/07

**Limited IDEM and EPA Database Searches  
For Potential and Known Sources of Lead in Northwestern Lake County**

Envirofacts Database search of Lake County Facilities containing lead was completed. This search may include facilities reporting lead in the CRTK reports (potential release) or known releases from may different datasets.

SampDB query of facilities with detections of Lead greater than the RISC Levels (Limited Facility and Facility Lead data available).

ULCERS database search resulted in identifying eight facilities in Lake County that had reference to lead in the facilities information. There was limited information regarding lead in the ULCERS database and the sites were not plotted on the map unless another dataset showed the facility due to the halt of the project.

Facilities with Known Releases or Contamination – This table contains potential and known releases compiled from Envirofacts and the Toxmap website.

Air Monitoring Stations Table– Data needs to be checked for potential or known releases.

Facilities with known Lead Releases or Contamination Table – A shapefile as created to to display this list of facilities.

IDEM GPS location database – contains only GPS points and facility names. The dataset does not contain any facility chemical information. It doesn't contain all facility locations. This dataset was used to plot the IDEM facilities in the area.

Of the information collected (not a complete dataset), not all the locations are represented on the map. EPA requested that IDEM stop working on the data collection to represent known and unknown sources of lead in the northwestern portion of Lake County. Not all the locations were plotted. The information in the tables and on the map were not checked for accuracy or quality of the information.

August 8, 2007

FACILITY NAME/ADDRESS	FACILITY INFORMATION	Permitted Discharge 310 Water?	Toxic Releases Reported?	Hazardous Waste Handling?	Active or Suspend?	All Releases Reported?
AMOCO THERM 231	View	NO	YES	YES	NO	YES
2530 INDIANAPOLIS BLVD	Facility	NO	YES	YES	NO	YES
WHITING, IN 46394	Information					
EVERY DENNISON	View	NO	YES	YES	NO	YES
650 W 67TH PL	Facility	YES	YES	YES	NO	YES
SCHERERVILLE, IN 46375	Information					
AVIST DUNSTON WFT	View	NO	YES	YES	NO	YES
270 WEST WILSON PLACE	Facility	NO	YES	YES	NO	YES
BEAUFORT, IN 46308	Information					
BEAUFORT OIL CO INC	View	NO	YES	YES	NO	NO
1040 MICHIGAN AVE	Facility	NO	YES	YES	NO	NO
GARY, IN 46403	Information					
BP AMOCO CHEMICAL CO	View	NO	YES	YES	NO	YES
2357 STANDARD AVE	Facility	NO	YES	YES	NO	YES
WHITING, IN 46394	Information					
BP AMOCO OIL COMPANY WHITING, IN 46394	View	NO	YES	YES	NO	YES
2815 INDIANAPOLIS BOULEVARD	Facility	NO	YES	YES	NO	YES
WHITING, IN 46394	Information					
BUCKEYE PIPE LINE CO	View	NO	YES	YES	NO	YES
428 W COLUMBUS DR	Facility	YES	NO	YES	NO	NO
EAST CHICAGO, IN 46312	Information					
BUCKEYE TERMINALS EAST	View	NO	YES	YES	NO	NO
CHICAGO	Facility	NO	YES	YES	NO	NO
2400 E MICHIGAN RD	Information					
INDIANAPOLIS, IN 46320	View	YES	NO	NO	NO	NO
CASILL INC	Facility	YES	NO	NO	NO	NO
1100 INDIANAPOLIS BLVD	Information					
HAMMOND, IN 463201094	View	YES	YES	YES	NO	YES
GARMEUSE LIME INCORPORATED	Facility	YES	YES	YES	NO	YES
BUFFINGTON STATION	Information					
NORTH CLARK ROAD AND LAKE MICHIGAN	View	YES	YES	YES	NO	YES
GARY, IN 46402	Facility	YES	YES	YES	NO	YES
OTGO PETROLEUM CORPORATION	Information					
2500 E CHICAGO AVE	View	YES	YES	YES	NO	YES
EAST CHICAGO, IN 46312	Facility	YES	YES	YES	NO	YES
CROWN POINT MUNICIPAL WWT	Information					
1321 MERRILLVILLE RD	View	YES	NO	NO	NO	NO
CROWN POINT, IN 46307	Facility	YES	NO	NO	NO	NO
DAVIES IMPERIAL COATINGS INCORPORATED	Information					
1775 STATE ST	View	NO	YES	YES	NO	YES
HAMMOND, IN 46320	Facility	NO	YES	YES	NO	YES
INDUSTRIES INCORPORATED	Information					
1435 WEST 165TH STREET	View	NO	YES	YES	NO	NO
HAMMOND, IN 46320	Facility	NO	YES	YES	NO	NO
DYER WWT	Information					
518 EDMOND DRIVE	View	YES	NO	NO	NO	NO
DYER, IN 46311	Facility	YES	NO	NO	NO	NO
EAST CHICAGO MUNICIPAL SEWAGE TREATMENT PLANT	Information					
5200 INDIANAPOLIS BOULEVARD	View	YES	NO	NO	NO	NO
EAST CHICAGO, IN 46312	Facility	YES	NO	NO	NO	NO
ELECTROTEK METALS	Information					
4407 RAILROAD AVENUE	View	NO	YES	YES	NO	NO
EAST CHICAGO, IN 46312	Facility	NO	YES	YES	NO	NO
ENERIDGE ENERGY HARTSDALE TERMINAL	Information					
131 W DIVISION ST	View	YES	NO	YES	NO	YES
SCHERERVILLE, IN 46375	Facility	YES	NO	YES	NO	YES
EQUILON ENTERPRISES LLC	Information					
1020 YATES STREET	View	YES	YES	YES	NO	YES
HAMMOND, IN 46320	Facility	YES	YES	YES	NO	YES

EQUILON ENTERPRISES LLC	View	Facility	Information	YES	YES	YES	NO		YES
2400 MICHIGAN ST.	View	Facility	Information	YES	YES	YES	NO		YES
HAMMOND, IN 46320	View	Facility	Information	YES	YES	YES	NO		YES
EXXONER PIPELINE COMPANY	View	Facility	Information	YES	YES	YES	NO		YES
3737 MICHIGAN AVENUE	View	Facility	Information	YES	YES	YES	NO		YES
HAMMOND, IN 46323	View	Facility	Information	YES	YES	YES	NO		YES
GARY SANITARY DISTRICT WWTP	View	Facility	Information	YES	YES	YES	NO		YES
3600 W 3RD AVE	View	Facility	Information	YES	YES	YES	NO		YES
GARY, IN 46402	View	Facility	Information	YES	YES	YES	NO		YES
HALSTAB DIV HAMMOND LEAD	View	Facility	Information	YES	YES	YES	NO		YES
3100 MICHIGAN ST	View	Facility	Information	YES	YES	YES	NO		YES
HAMMOND, IN 46323	View	Facility	Information	YES	YES	YES	NO		YES
HAMMOND LEAD PRODUCTS INC	View	Facility	Information	YES	YES	YES	NO		YES
2208 165TH ST	View	Facility	Information	YES	YES	YES	NO		YES
HAMMOND, IN 46320	View	Facility	Information	YES	YES	YES	NO		YES
HAMMOND WWTP	View	Facility	Information	YES	YES	YES	NO		YES
180 & US 41	View	Facility	Information	YES	YES	YES	NO		YES
HAMMOND, IN 46320	View	Facility	Information	YES	YES	YES	NO		YES
HARSCO CO MULTISERV PLANT 11	View	Facility	Information	YES	YES	YES	NO		YES
1710 WATLING ST C/O IN AND STEEL	View	Facility	Information	YES	YES	YES	NO		YES
EAST CHICAGO, IN 46312	View	Facility	Information	YES	YES	YES	NO		YES
HARSCO COMPANY CHECKET	View	Facility	Information	YES	YES	YES	NO		YES
MULTISERV PLANT 7	View	Facility	Information	YES	YES	YES	NO		YES
3001 DICKY ROAD	View	Facility	Information	YES	YES	YES	NO		YES
EAST CHICAGO, IN 46312	View	Facility	Information	YES	YES	YES	NO		YES
INDIANA PALLET	View	Facility	Information	YES	YES	YES	NO		YES
4610 KENNEDY AVE	View	Facility	Information	YES	YES	YES	NO		YES
EAST CHICAGO, IN 46312	View	Facility	Information	YES	YES	YES	NO		YES
ISPAI INLAND INCORPORATED	View	Facility	Information	YES	YES	YES	NO		YES
3210 WATLING ST	View	Facility	Information	YES	YES	YES	NO		YES
EAST CHICAGO, IN 46312	View	Facility	Information	YES	YES	YES	NO		YES
UPITER ALUMINUM CORPORATION	View	Facility	Information	YES	YES	YES	NO		YES
1745 165TH ST	View	Facility	Information	YES	YES	YES	NO		YES
HAMMOND, IN 46320	View	Facility	Information	YES	YES	YES	NO		YES
LAKEHEAD PIPELINE CO	View	Facility	Information	YES	YES	YES	NO		YES
1600 W MAIN ST	View	Facility	Information	YES	YES	YES	NO		YES
GRIFFITH, IN 46319	View	Facility	Information	YES	YES	YES	NO		YES
LSA STEEL COMPANY	View	Facility	Information	YES	YES	YES	NO		YES
1412 150TH ST	View	Facility	Information	YES	YES	YES	NO		YES
HAMMOND, IN 46327	View	Facility	Information	YES	YES	YES	NO		YES
LSA STEEL COMPANY ELIUD	View	Facility	Information	YES	YES	YES	NO		YES
1045 11TH ST	View	Facility	Information	YES	YES	YES	NO		YES
GRIFFITH, IN 46310	View	Facility	Information	YES	YES	YES	NO		YES
LOWELL WASTEWATER TREAT PLT	View	Facility	Information	YES	YES	YES	NO		YES
7500 BELL SHAW RD	View	Facility	Information	YES	YES	YES	NO		YES
LOWELL, IN 46356	View	Facility	Information	YES	YES	YES	NO		YES
LIV STEEL TWS 1	View	Facility	Information	YES	YES	YES	NO		YES
3001 DICKY RD	View	Facility	Information	YES	YES	YES	NO		YES
EAST CHICAGO, IN 46312	View	Facility	Information	YES	YES	YES	NO		YES
MARATHON ASHLAND PETROLEUM	View	Facility	Information	YES	YES	YES	NO		YES
LLC	View	Facility	Information	YES	YES	YES	NO		YES
4200 COLUMBIA AVE	View	Facility	Information	YES	YES	YES	NO		YES
HAMMOND, IN 46327	View	Facility	Information	YES	YES	YES	NO		YES
MARATHON ASHLAND PIPELINE LLC	View	Facility	Information	YES	YES	YES	NO		YES
1900 W AVE H	View	Facility	Information	YES	YES	YES	NO		YES
GRIFFITH, IN 46310	View	Facility	Information	YES	YES	YES	NO		YES
MITTAL STEEL USA INC INDIANA	View	Facility	Information	YES	YES	YES	NO		YES
HARBOR EAST	View	Facility	Information	YES	YES	YES	NO		YES
3210 WATLING ST MAIL CODE (8-130)	View	Facility	Information	YES	YES	YES	NO		YES
EAST CHICAGO, IN 46312	View	Facility	Information	YES	YES	YES	NO		YES
MOBIL OIL HAMMOND TERMINAL	View	Facility	Information	YES	YES	YES	NO		YES
1527 19TH STREET	View	Facility	Information	YES	YES	YES	NO		YES
HAMMOND, IN 46327	View	Facility	Information	YES	YES	YES	NO		YES
BRIDGES STEEL COMPANY	View	Facility	Information	YES	YES	YES	NO		YES
INCORPORATED	View	Facility	Information	YES	YES	YES	NO		YES

19505 CALUMET AVENUE MUNSTER, IN 46321	Information	NO	YES	YES	NO	YES
NATIONAL BROCKETT CORPORATION 5222 INDIANAPOLIS BLVD. EAST CHICAGO, IN 46312	Facility	NO	YES	YES	NO	YES
INTECO BLANK MITCHELL GENERATING STATION 1 NORTH CLARK ROAD GARY, IN 46401	Facility	YES	YES	YES	NO	YES
ONE STOP LLC 5500 W 5TH AVE GARY, IN 46406	Facility	NO	YES	YES	NO	NO
PHILLIPS PETROLEUM COMPANY EAST CHICAGO II REMINAL 400 EAST COLUMBUS DRIVE EAST CHICAGO, IN 46312	Facility	YES	YES	YES	NO	YES
POLLUTION CONTROL INC 4445 NEWBURY AVE EAST CHICAGO, IN 46312	Facility	YES	YES	YES	NO	YES
2700 CASPAR AVE WHITING, IN 46394	Facility	NO	YES	NO	NO	NO
REPUBLIC TECHNOLOGIES INTERNATIONAL 2800 E. DUNES HWY GARY, IN 46402	Facility	YES	YES	YES	NO	YES
REPUBLIC TECHNOLOGIES INTERNATIONAL 4000 EAST 7TH AVENUE GARY, IN 46403	Facility	NO	YES	YES	NO	NO
RIDODIA INCORPORATED 2000 MICHIGAN STREET HAMMOND, IN 46320462	Facility	YES	YES	YES	NO	YES
SAFETY KLEEN OIL RECOVERY 601 RILEY RD EAST CHICAGO, IN 46312	Facility	NO	YES	YES	NO	YES
3200 INDIANAPOLIS BLVD. WHITING, IN 46394	Facility	NO	YES	YES	NO	YES
STATE LINE ENERGY LLC 103RD ST & LAKE MICHIGAN HAMMOND, IN 46320	Facility	YES	YES	YES	NO	YES
TIERRA ENVIRONMENTAL SERVICES 3921 INDIANAPOLIS BLVD EAST CHICAGO, IN 46312	Facility	YES	NO	YES	NO	YES
TRANSMONTAINE PIPELINE HARTSDALE STATION 45 DIVISION SCHERERVILLE, IN 46375	Facility	YES	NO	YES	NO	YES
US STEEL CO 301 RILEY RD EAST CHICAGO, IN 46312	Facility	NO	YES	YES	NO	NO
US STEEL CORPORATION GARY WORKS 1 INBRODAWAY GARY, IN 46402	Facility	YES	YES	YES	NO	YES
US STEEL CORP EAST CHICAGO, IN 46312	Facility	NO	YES	YES	NO	YES
WASTEWATER TREATMENT PLANT 550 KAESER BOULEVARD SCHERERVILLE, IN 46375	Facility	YES	NO	NO	NO	NO
WOLFE LAKE INDUSTRIAL CTBRS HAMMOND DEPOT 3200 SHEFFIELD AVE HAMMOND, IN 46320	Facility	YES	NO	YES	NO	YES



SampleDB Query: Facilities with Detections of Lead greater than the RISC Levels (Limited Facility and Facility Lead data available)

Facility ID	County	Facility Name	Facility Type	Facility Location	Sample Location	Sample Date	Sample Type	Sample Result	Sample Unit	Sample Method	Sample Assigned	Sample Method
142	Lake	Gary Development Landfill	MSWLF	MSWLF	West Well	22-Jul-02	Lead (Total)	4000 mg/L	1	1000	0	SW7201
143	Lake	Griffin Landfill	MSWLF	MSWLF	Ground Water	01-Jan-01	Lead (Dissolved)	0.14 mg/L	1	0.036	0	SW7201
648	Lake	SP Amoco Whiting Lakesfront	MSWLF	MSWLF	Ground Water	19-Apr-00	Lead (Total)	0.088 mg/L	1	0.036	0	SW7201
140	Lake	Gary Sanitary Landfill	MSWLF	MSWLF	Ground Water	30-Jan-91	Lead (Dissolved)	13000 mg/L	1	3000	0	SW7201
648	Lake	US Steel - RCRA Units	MSWLF	MSWLF	Ground Water	05-Oct-97	Lead (Dissolved)	0.013 mg/L	1	0.001	0	SW7201
4378	Lake	Pilot Travel Centers #033	ELT/FUST	ELT/FUST	Soil	09-Oct-97	Lead	0.134 mg/L	1	1000	0	SW7201
406	Lake	Mason (Metal) Disposal Area	RWSI	RWSI	Ground Water	20-Feb-97	Lead (Total)	2500 ppm	1	0.001	0	SW7201
141	Lake	US Steel - BOP Disposal Area	MSWLF	MSWLF	Ground Water	05-Dec-01	Lead (Dissolved)	0.047 mg/L	1	0.001	0	SW7201
141	Lake	Munster Landfill	RWSI	RWSI	Ground Water	30-Apr-03	Lead (Total)	56500 mg/L	1	3000	0	SW7201
406	Lake	Federal Metals Corp.	MSWLF	MSWLF	Ground Water	25-Sep-03	Lead (Dissolved)	0.021 mg/L	1	0.001	0	SW7201
428	Lake	Godard Property	RWSI	RWSI	Ground Water	02-Feb-04	Lead (Total)	156 mg/L	1	10	0	SW7201
157	Lake	US Steel - SWOT	SCS	SCS	Ground Water	11-Jun-04	Lead (Dissolved)	0.067 mg/L	1	0.001	0	SW7201
4381	Lake	Praxair, Inc.	ELT/FUST	ELT/FUST	Ground Water	01-Jul-04	Lead (Total)	0.299 mg/L	1	0.05	0	SW7201
4381	Lake	Lanigan Portland Cement Company - Gary	ELT/FUST	ELT/FUST	Water	12-Oct-04	Lead (Total)	0.17 mg/L	1	0.05	0	SW7201
4381	Lake	Lanigan Portland Cement Company - Gary	ELT/FUST	ELT/FUST	Ground Water	20-Jan-06	Lead (Total)	0.1 mg/L	1	0.01	0	SW7201
4331	Lake	Aula Transmission (CVS Pharmacy)	ELT/FUST	ELT/FUST	Ground Water	22-Feb-06	Lead (Total)	0.016 mg/L	1	0.001	0	SW7201
4659	Lake	Starling Material	ELT/FUST	ELT/FUST	Ground Water	19-Apr-07	Lead (Total)	0.022 mg/L	1	0.001	0	SW7201

ULCERS Database Search for  
Facilities with Lead  
Limited Lead and Facilities Data Available

August 8, 2008

County	State	Facility Name	Facility ID	Chemical Name	Chemical ID	Chemical Type	Chemical Description	Chemical Quantity	Chemical Location	Chemical Status	Chemical Notes	Chemical Comments
1 Lake	SC	SC	131 rows (not facilities)	33 rows with chemicals	6	None - no way to search by chemical the CRTK_CHEM_SUM_V is missing; no linkage	No lead found	18 dup fac showing different chemicals	15 fac with chemicals listed	15 fac with chemicals listed	15 fac with chemicals listed	15 fac with chemicals listed
2 Lake	BF	BF	6	33 rows with chemicals	6	None - no way to search by chemical the CRTK_CHEM_SUM_V is missing; no linkage	No lead found	4 dup fac showing different chemicals	2 fac with chemicals listed	2 fac with chemicals listed	2 fac with chemicals listed	2 fac with chemicals listed
3 Lake	CRTK	CRTK	918	33 rows with chemicals	0	None - no way to search by chemical the CRTK_CHEM_SUM_V is missing; no linkage	No lead found	16 dup fac showing different chemicals	no chem listed	no chem listed	no chem listed	no chem listed
4 Lake	SC	SC	131 rows	33 rows with chemicals	0	None - no way to search by chemical the CRTK_CHEM_SUM_V is missing; no linkage	No lead found	16 dup fac showing different chemicals	115 fac with different chem	115 fac with different chem	115 fac with different chem	115 fac with different chem
5 Lake	SF	SF	0	33 rows with chemicals	0	None - no way to search by chemical the CRTK_CHEM_SUM_V is missing; no linkage	No lead found	3 dup fac showing different chemicals	0	0	0	0
6 Lake	SI	SI	4	33 rows with chemicals	4 rows	None - no way to search by chemical the CRTK_CHEM_SUM_V is missing; no linkage	No lead found	3 dup fac showing different chemicals	1 fac with dif chem	1 fac with dif chem	1 fac with dif chem	1 fac with dif chem
7 Lake	Spills	Spills	311	33 rows with chemicals	311 rows had chemical ID number	None - no way to search by chemical the CRTK_CHEM_SUM_V is missing; no linkage	1 row had lead listed (2230 s Indianapolis ave)	5 rows w dup fac dif chemicals	6 fac with lead	6 fac with lead	6 fac with lead	6 fac with lead
8 Lake	VRP	VRP	422	33 rows with chemicals	422	None - no way to search by chemical the CRTK_CHEM_SUM_V is missing; no linkage	11 rows contain Lead and or lead compounds	5 rows w dup fac dif chemicals	6 fac with lead	6 fac with lead	6 fac with lead	6 fac with lead

EPA stopped project on 8/7/07. ULCERS lead information on facilities was insufficient to determine potential or known releases of lead. The information above is not shown on map unless one of the other searches showed the facility.

[illegible]

891

## Facilities with Known Lead Releases or Contamination.

Facility Name	Facility Address
Cor Action site - USS Lead CAMU	CorAction-Mike Sicels
USS Lead Site	1930 SANBORN MAP per Mike Sicels
International lead (Anconda and Eagle Pritchard)	1930 SANBORN MAP per Mike Sicels
US Reduction 7 loc	Parcel line
E I DuPont Nemours & Company	SI Boundary is an estimate - unknown
Metals Refining	CorAction - Boundary is an estimate - unknown
Wolf Lake Terminals, INC Rapid Waste and Fluids Eng. Corp Wolf Lake Terminals	Boundary is an estimate - unknown 1745 165TH ST
JUPITER ALUMINUM CORPORATION	Lake co facility layer - EPA fac sheet
Calumet container	SampleDB greater than Lead Risc levels and Rog Fac SampleDB 20070801-Sample results greater than MCL
BP Amoco Whiting Lakefront	SampleDB reater than Lead Risc levels - Reg Fac SampleDB 20070801-Sample results greater than MCL
Federated Metals	MSWLF - SampleDB greater than Lead risc level & MikeSic Brdy SampleDB 20070801-Sample results greater than MCL
Gary Development Landfill	MSWLF - CorAction - SampleDB 20070801-Sample results greater than MCL
Gary Development-CAMU	MSWLF - RogFac - SampleDB results greater than MCL
Gary Landfill	SampleDB Lead greater than RISC level - ? Loc sampleDB desc. SW corner of Melton and Lake St. (SC-INS000072082 GaryGoldberg)
Goldberg Property (SampleDB) 7loc SC site	SampleDB Lead greater Risc levels - <a href="http://www.griffithindiana.com/pic4.htm">http://www.griffithindiana.com/pic4.htm</a> , sampledb, and EPA facsheet about Griffith LF
Griffith Landfill inactive portion- Loc? and lead firing range (picture)	Boundary is an estimate - unknown 2340 165th St
HAMMOND LEAD PRODUCTS INC HALSTAB	SampleDB greater than RISC numbers for lead
Mason Corporation	UST Bd is only estimate needs correction - SampleDB Lead greater than Risc levels, 6445 Calumet Ave
Atlas Transmission (CVS Pharmacy)	UST - Bd is an estimate needs correction - SampleDB Lead greater than RISC level
Pilot Travel Centers #033	UST - SampleDB Lead greaterthan RISC levels - 4400 Kennedy Ave.
Praxair Inc.	SampleDB Lead greater than Risc levels - BD for specific area unknown - Rog fac shape-
US Steel - /rcra units and BOP Disposal area	

## ILLINOIS



**INDIANA DEPARTMENT OF  
ENVIRONMENTAL MANAGEMENT**

	<ul style="list-style-type: none"> <li>• Fixtures with lead releases (linked search of a new IDEM fixture)</li> <li>• Fixtures with lead releases prior to 2005 (to temp., TRL, not a complete list)</li> <li>• Facilities reported using lead (Envirofacts 2007/073-not a complete list)</li> <li>• Facility sources from September 1997 (not a complete list)</li> <li>• Connections/Status_QLG</li> <li>• LUT Sites_QLG</li> <li>• ActivePermittedVehicles_QLG</li> <li>• ConstructionActivities_QLG</li> <li>• ConstructionDescription_QLG</li> <li>• Corrective Action Sites_QLG</li> <li>• Corrective Action Status_QLG</li> <li>• IndustrialWaters_QLG</li> <li>• LULUs_QLG</li> <li>• NPDESFacility_QMG</li> <li>• NPDES Spills_QMG</li> <li>• OpenDams_QLG</li> <li>• PCBFacility_QMG</li> <li>• PCBSpill_QMG</li> <li>• RemediatedConnections_QLG</li> <li>• Test Sites_QLG</li> <li>• IDEM Office of Air Title V Facilities (IDEM Title V facilities - not complete list)</li> <li>• TSG_QLG</li> </ul>	<ul style="list-style-type: none"> <li>• ExportProg_QMG</li> </ul>
<ul style="list-style-type: none"> <li>• Potential lead-based sample locations</li> </ul>		

[illegible]

## ATTACHMENT G

## ATTACHMENT H



# 4 Mile Radius Map Metals Refining Site, Lake County, IN INN000509964

## Legend

- Metals Refining Site

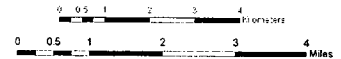
Distance from Site	Population
0 to 0.5 mile	331
0.5 to 1 mile	79
1 to 1.5 miles	6,248
1.5 to 2 miles	47,237
2 to 3 miles	60,096
3 to 4 miles	60,886
Total (0 to 4 miles)	175,587

Map prepared by IDEM, Inc. for the Indiana Department of Environmental Management (IDEM) as part of the Metals Refining Site Remedial Investigation and Feasibility Study (RIFS) for the Metals Refining Site in Lake County, Indiana. The map shows the 4-mile radius around the site and the population within that radius. The map is based on the 2000 Census data and the 2000 Census of Population and Housing. The map is not to scale and is for informational purposes only. The map is not a legal document and should not be used for legal purposes. The map is the property of IDEM, Inc. and is not to be reproduced without the written consent of IDEM, Inc.

Map prepared by IDEM, Inc. for the Indiana Department of Environmental Management (IDEM) as part of the Metals Refining Site Remedial Investigation and Feasibility Study (RIFS) for the Metals Refining Site in Lake County, Indiana. The map shows the 4-mile radius around the site and the population within that radius. The map is based on the 2000 Census data and the 2000 Census of Population and Housing. The map is not to scale and is for informational purposes only. The map is not a legal document and should not be used for legal purposes. The map is the property of IDEM, Inc. and is not to be reproduced without the written consent of IDEM, Inc.

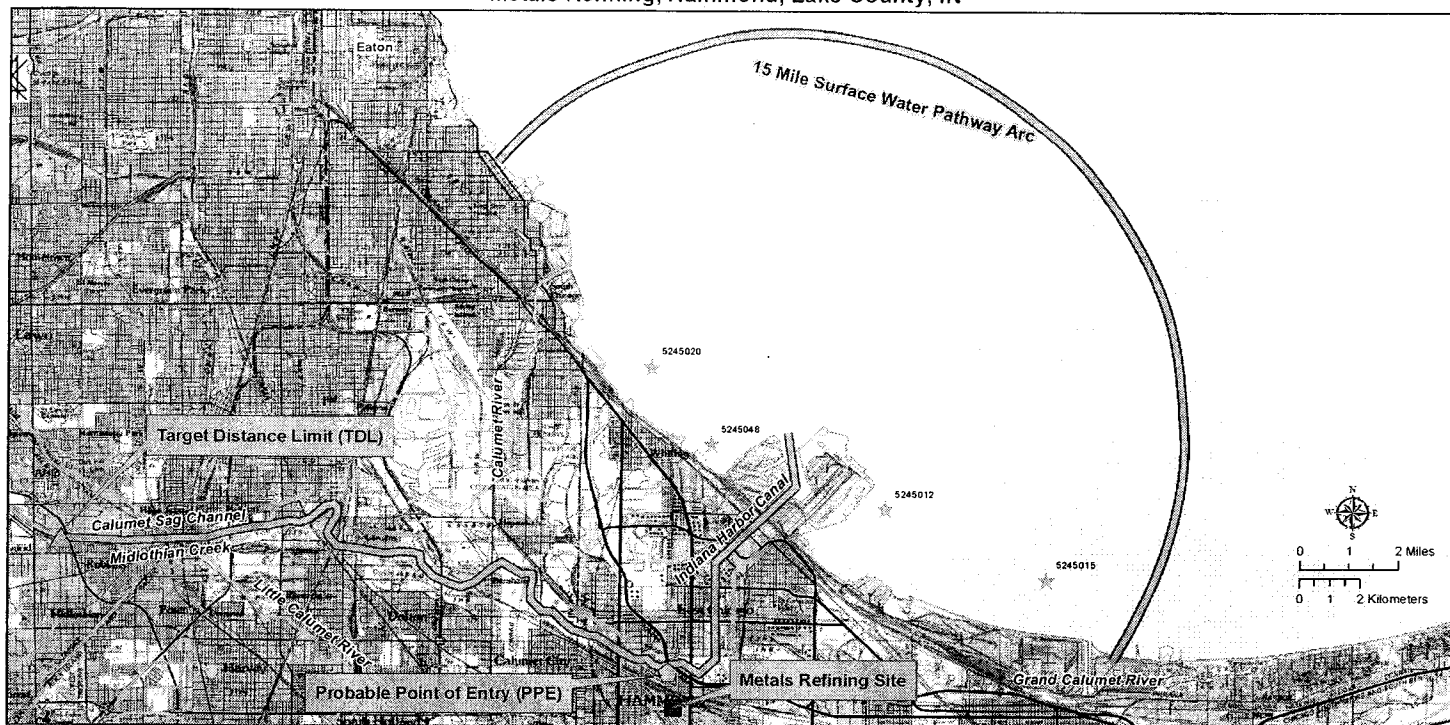
Map prepared by IDEM, Inc. for the Indiana Department of Environmental Management (IDEM) as part of the Metals Refining Site Remedial Investigation and Feasibility Study (RIFS) for the Metals Refining Site in Lake County, Indiana. The map shows the 4-mile radius around the site and the population within that radius. The map is based on the 2000 Census data and the 2000 Census of Population and Housing. The map is not to scale and is for informational purposes only. The map is not a legal document and should not be used for legal purposes. The map is the property of IDEM, Inc. and is not to be reproduced without the written consent of IDEM, Inc.

**IDEM**  
INDIANA DEPARTMENT OF  
ENVIRONMENTAL MANAGEMENT



## ATTACHMENT I

# 15 Mile Surface Water Pathway Topographic Map Metals Refining, Hammond, Lake County, IN



Sources:  
Topographic map from USA Topo  
National Hydrography Dataset (NHD)  
INDOT - System 1 Routes and County Boundaries  
PPE, TDL, and Surface Water Pathway were digitized.  
Surface water intakes from IDEM, OLG, PWS  
Waterbodies from GeoData (EPA)

Map Projection: UTM Zone 18N Map Datum: NAD83



Hammond  
Lake County

- ★ Surface Intakes (PWSID #)
- Flow Line
- Metals Refining Site
- ◆ Probable Point of Entry (PPE)
- △ Target Distance Limit (TDL)
- 15 Mile Surface Water Pathway
- Waterbodies
- Roads
- National Hydrography Dataset Flow Line



INTERNAL DELIBERATIVE COMMUNICATION-Not For Public Release (Protected Internal Communication Under IC 5-14-3-4 (b)(6) Or Information Not Obtained Under Authority Of, Nor Required By, State Law)

Mapped by: Lorraine Wright IDEM, Office of Land Quality, Science Services Branch, Engineering & GIS Services.  
Date: February 18, 2011

Disclaimer: This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes

## ATTACHMENT J



Indiana Department of Natural Resources

Mitchell E. Daniels, Jr., Governor  
Kyle J. Hupfer, Director

Division of Nature Preserves  
402 W. Washington St., Rm W267  
Indianapolis IN 46204-2739

August 21, 2006

ATTN: Bill Giles  
IDEM/OIQ Site Investigation  
100 N. Senate Avenue  
Mail Code 66-30 Rm 1101  
Indianapolis, IN 46204-2251

Dear Mr. Giles:

I am responding to your request for information on the endangered, threatened, or rare (ETR) species, high quality natural communities, and natural areas documented within a one mile radius or 15 miles down gradient of the Metals Refining Site, 1723 Summer Street, Hammond, Indiana. The Indiana Natural Heritage Data Center has been checked and enclosed you will find information on the ETR species documented from the project search area.

For more information on the animal species mentioned, please contact Katie Smith, Nongame Supervisor, Division of Fish and Wildlife, 402 W. Washington Room W273, Indianapolis, Indiana 46204, (317)232-4080.

The information I am providing does not preclude the requirement for further consultation with the U.S. Fish and Wildlife Service as required under Section 7 of the Endangered Species Act of 1973. You should contact the Service at their Bloomington, Indiana office.

U.S. Fish and Wildlife Service  
620 South Walker St.  
Bloomington, Indiana 47403-2121  
(812)334-4261

At some point, you may need to contact the Department of Natural Resources' Environmental Review Coordinator so that other divisions within the department have the opportunity to review your proposal. For more information, please contact:

Kyle Hupfer, Director  
Department of Natural Resources  
attn: Christie Stanifer  
Environmental Coordinator  
Division of Water  
402 W. Washington Street, Room W264  
Indianapolis, IN 46204  
(317)232-4160

August 21, 2006

Please note that the Indiana Natural Heritage Data Center relies on the observations of many individuals for our data. In most cases, the information is not the result of comprehensive field surveys conducted at particular sites. Therefore, our statement that there are no documented significant natural features at a site should not be interpreted to mean that the site does not support special plants or animals.

Due to the dynamic nature and sensitivity of the data, this information should not be used for any project other than that for which it was originally intended. It may be necessary for you to request updated material from us in order to base your planning decisions on the most current information.

Thank you for contacting the Indiana Natural Heritage Data Center. You may reach me at (317)232-8059 if you have any questions or need additional information.

Sincerely,

*Ronald P. Hellmich*  
Ronald P. Hellmich  
Indiana Natural Heritage Data Center

enclosure: data sheet

8/21/2006

Endangered, Threatened and Rare Species, and High Quality Natural Communities within one mile of the Metals Refining Site, 1723 Summer Street, Hammond, Lake County, Indiana

TYPE	SPECIES NAME	COMMON NAME	FED	STATE	TRS	LASTOBS	COMMENTS
Amphibian	Rana pipiens	Northern Leopard Frog		SSC	037N009W 32 SWQ	1984	
	Chlidonias niger	Black Tern		SE	037N009W 32 CTR WH & SWQ	1989-06-24	
Bird	Cistothorus palustris	Marsh Wren		SE	037N009W 32 SWQ	1985-07	
Bird	Ixobrychus exilis	Least Bittern		SE	037N009W 32 SWQ	1984-06-28	
Bird	Nycticorax nycticorax	Black-crowned Night-heron		SE	037N009W 32 SWQ	1986-06-28	
Bird	Rallus limicola	Virginia Rail		SE	037N009W 32 WH	1982-07-20	
Bird	Xanthocephalus xanthocephalus	Yellow-headed Blackbird		SE	037N009W 32 SWQ	1986-06-21	
Mammal	Spermophilus franklinii	Franklin's Ground Squirrel		SE	037N009W 32 NEQ SWQ	1985-07-02	

Fed: LE = listed federal endangered; C = federal candidate species

S SE = state endangered; ST = state threatened; SR = state rare; SSC = state species of special concern; SG = state significant; WL = watch list; no rank = not ranked but tracked to monitor status

Grank: Heritage Global Rank: G1 = critically imperiled; G2 = imperiled; G3 = rare or uncommon; G4 = widespread but with long term concerns; G5 = widespread and secure; GU = unranked

Srank: State Heritage Rank: S1 = critically imperiled; S2 = imperiled; S3 = rare or uncommon; S4 = widespread but with long term concerns SNR = not ranked; B = breeding rank; SNA = not resident in state in non-breeding season

June, 18, 20

Endangered, Threatened and Rare Species, and High Quality Natural Communities near a Metals Refining Site, Hammond, Indiana

SNAME	SCOMNAME	USESA	SPRO TRS	LASTOBS
<b>Map # 1</b>				
<b>ROXANNA MARSH</b>				
<i>Ixobrychus exilis</i>	Least Bittern	SE	037N009W 32 SWQ	1984-06-28
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird	SE	037N009W 32 SWQ	1986-06-21
<i>Rana pipiens</i>	Northern Leopard Frog	SSC	037N009W 32 SWQ	1984
<i>Spermophilus franklinii</i>	Franklin's Ground Squirrel	SE	037N009W 32 NEQ SWQ	1985-07-02
<i>Cistothorus palustris</i>	Marsh Wren	SE	037N009W 32 SWQ	1985-07
<i>Nycticorax nycticorax</i>	Black-crowned Night-heron	SE	037N009W 32 SWQ	1986-06-28
<i>Rallus limicola</i>	Virginia Rail	SE	037N009W 32 WH	1982-07-20
<i>Chlidonias niger</i>	Black Tern	SE	037N009W 32 CTR WH & SWQ	1989-06-24

**Map # 2**

<i>Spermophilus franklinii</i>	Franklin's Ground Squirrel	SE	037N009W 33 SWQ NWQ	1992-08-05
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**Map # 3**

<i>Spermophilus franklinii</i>	Franklin's Ground Squirrel	SE	037N009W 33 SEQ	2002-09-04
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**SEIDNER DUNE AND SWALE NATURE PRESERVE**

<i>Juncus balticus</i> var. <i>littoralis</i>	Baltic Rush	SR	037N009W 33 SWQ	2001
<i>Chlidonias niger</i>	Black Tern	SE	037N009W 33 NH SEQ	1991-07-11
<i>Grammia oithona</i>	Oithona's Grammia	SR	037N009W 33 SEQ	2001
<i>Semiothisa eremiata</i>	The Goat's Rue Looper	SR	037N009W 33 SEQ	2001
<i>Hesperia leonardus</i>	Leonard's Skipper	SR	037N009W 33 SEQ	2001
<i>Cistothorus palustris</i>	Marsh Wren	SE	037N009W 33 SEQ	1987-06-06
<i>Ardea alba</i>	Great Egret	SSC	037N009W 33 NEQ SEQ	1988-06-10
<i>Peoria gemmatella</i>	Gemmed Cordgrass Borer	SR	037N009W 33 SEQ	2001

Fed: LE = listed federal endangered; C = federal candidate species  
 State: SE = state endangered; ST = state threatened; SR = state rare; SSC = state species of special concern; SG = state significant; WL = watch list; no rank = not ranked but tracked to monitor status





INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

*We make Indiana a cleaner, healthier place to live.*

Mitchell E. Daniels, Jr.  
Governor

Thomas W. Easterly  
Commissioner

100 North Senate Avenue  
Indianapolis, Indiana 46204-2251  
(317) 232-8603  
(800) 451-6027  
www.IN.gov/idem

June 13, 2007

ATTN: Mr. Ronald Hellmich  
Indiana Natural Heritage Program  
IDNR Division of Nature Preserves  
402 West Washington Street  
Indianapolis, IN 46206

Dear Mr. Hellmich:

Re: Metals Refining Inc. Site  
Sensitive Environments,  
Endangered Species, etc.

Enclosed is a part of a topographic map depicting the Metals Refining Inc. site in Hammond, Lake County, Indiana that is under investigation by our office's Site Investigation Section. The site can be found on the Highland Indiana Topographic map.

Please send me any information regarding the following items for a (1) one mile radius around the site or within 15 miles downgradient of the site:

- State or Federal endangered, threatened, or rare species;
- State land designated for wildlife, game, or fisheries management;
- Any other sensitive or unique biological communities.

To the following address:

ATTN: Bill Giles  
IDEM/OLQ Site Investigation -OR-  
100 N. Senate Ave.  
Mail Code: 66-30 Rm. 1101  
Indianapolis, IN 46204-2251

(Via Interdepartmental Mail)  
Bill Giles  
IDEM/OLQ Site Investigation  
IGCN - Room 1101

This information is needed within a one-mile radius around the site and 15 miles downgradient of the site along the surface water pathway. If possible, please indicate any appropriate information directly on the enclosed map. Your assistance is greatly appreciated. You may contact me at 317/234-0345 if you have any questions regarding this request.

Thank You,

Billy E. Giles  
Site Investigation Section  
Office of Land Quality

BG/sb  
Enclosure

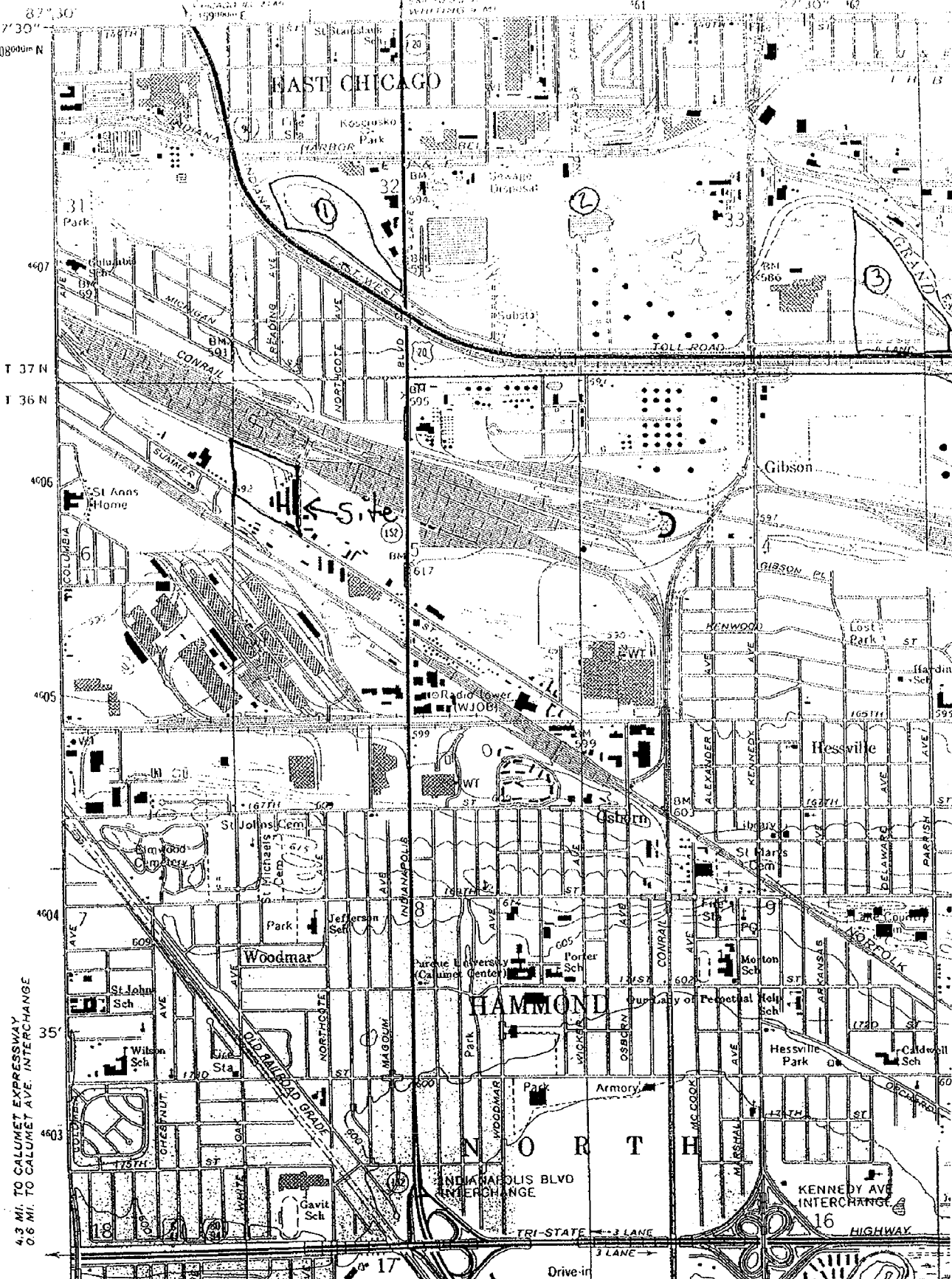
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UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

87° 30'  
41° 37' 30" N  
4008000m N



4.3 MI. TO CALUMET EXPRESSWAY  
0.6 MI. TO CALUMET AVE. INTERCHANGE

ATTACHMENT K



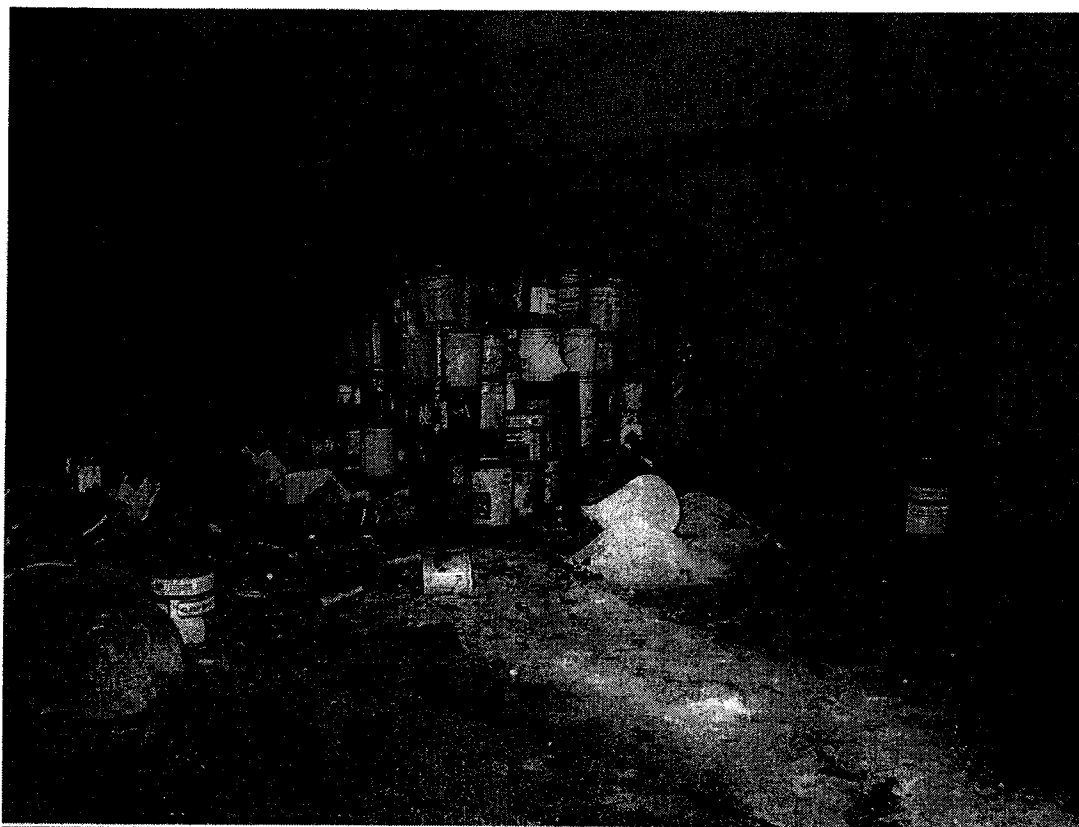
Site:	Metals Refining Site
Site ID:	INN000509964
Date:	1/19/10
Weather:	Cloudy, Cold
Description:	East side of Metals Refining Facility from Hump Road facing <u>North</u>



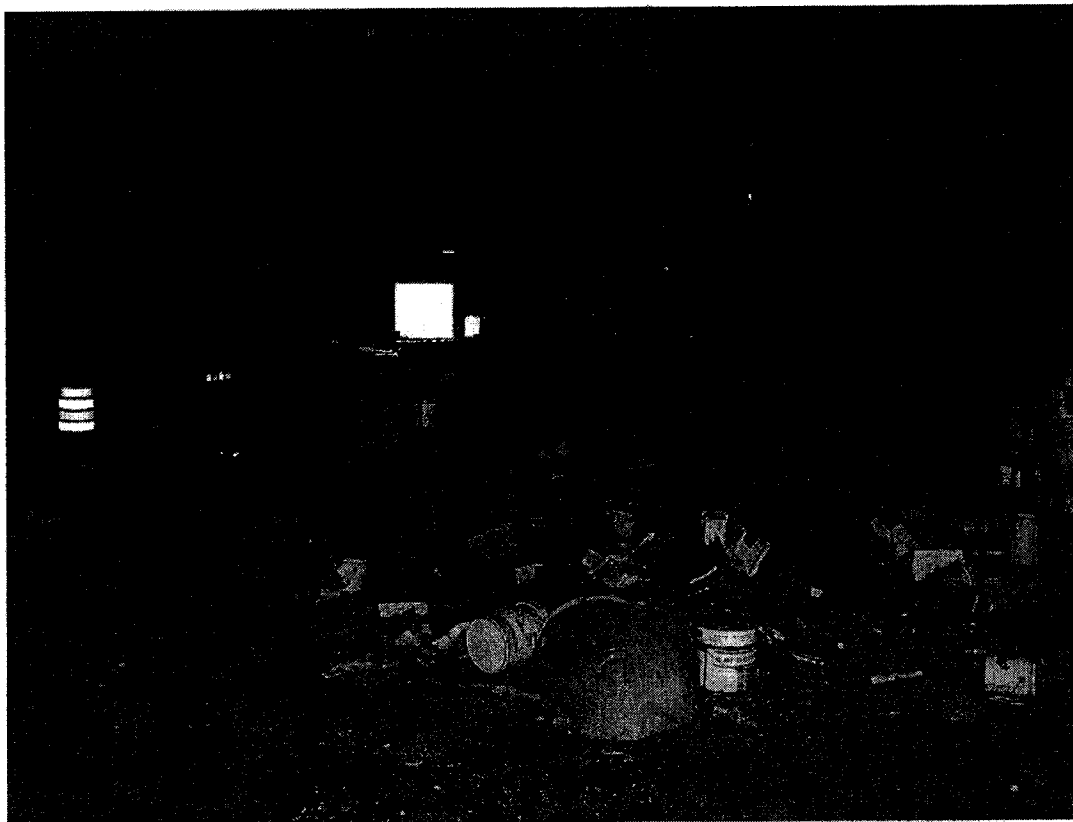
Site:	Metals Refining Site
Site ID:	INN000509964
Date:	1/19/10
Weather:	Cloudy, Cold
Description:	East side of Metals Refining Facility from Hump Road facing South



Site:	Metals Refining Site
Site ID:	INN000509964
Date:	1/19/10
Weather:	Cloudy, Cold
Description:	East side of Metals Refining Facility from Hump Road; random debris



Site:	Metals Refining Site
Site ID:	INN000509964
Date:	1/19/10
Weather:	Cloudy, Cold
Description:	Building on East side of property



Site:	Metals Refining Site
Site ID:	INN000509964
Date:	1/19/10
Weather:	Cloudy, Cold
Description:	Building on East side of property





Site:	Metals Refining Site
Site ID:	INN000509964
Date:	1/19/10
Weather:	Cloudy, Cold
Description:	Photo taken from Northwest portion of property looking south



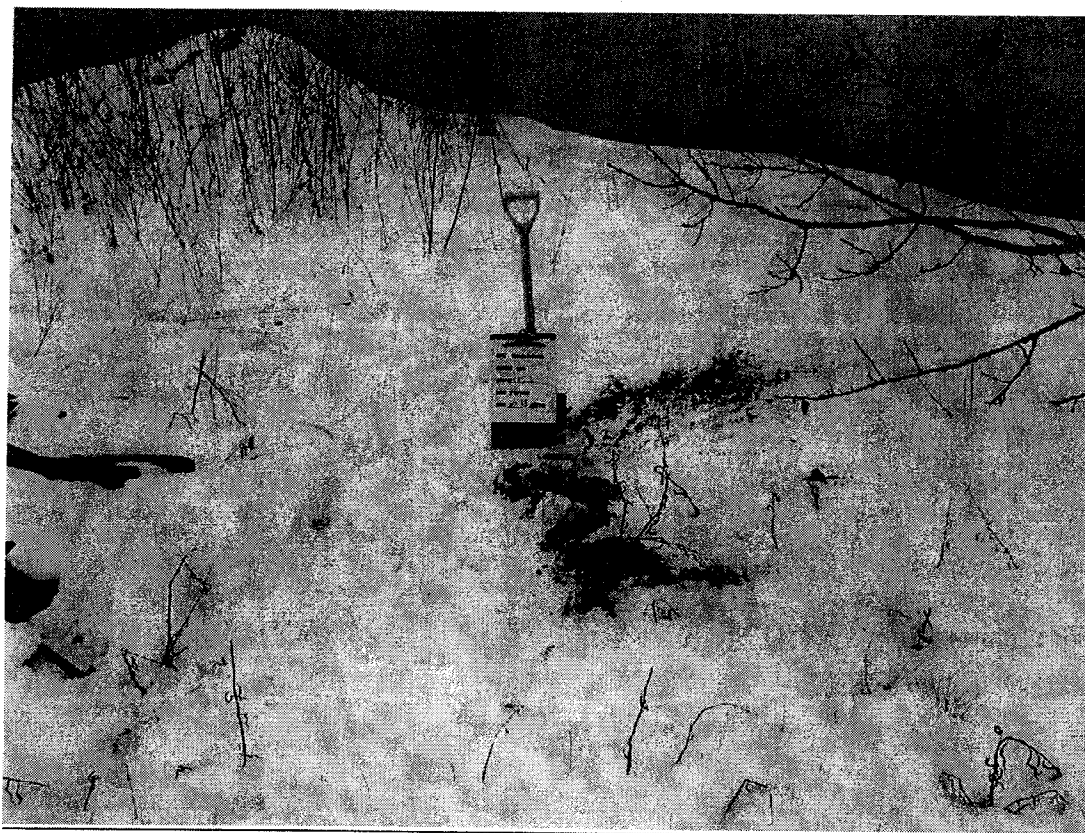
Site:	Metals Refining Site
Site ID:	INN000509964
Date:	1/19/10
Weather:	Cloudy, Cold
Description:	Main building complex in South central portion of property



Site:	Metals Refining Site
Site ID:	INN000509964
Date:	1/19/10
Weather:	Cloudy, Cold
Description:	Drums in center of property



Site:	Metals Refining Site
Site ID:	INN000509964
Date:	1/19/10
Weather:	Cloudy Cold
Sample ID:	OS2
Sample Type:	XRF Soil Screening Sample
Description:	Sample was collected on the North central portion of property



Site:	Metals Refining Site
Site ID:	INN000509964
Date:	1/19/10
Weather:	Cloudy Cold
Sample ID:	OS1
Sample Type:	XRF Soil Screening Sample
Description:	Sample was collected on East side of site next to building

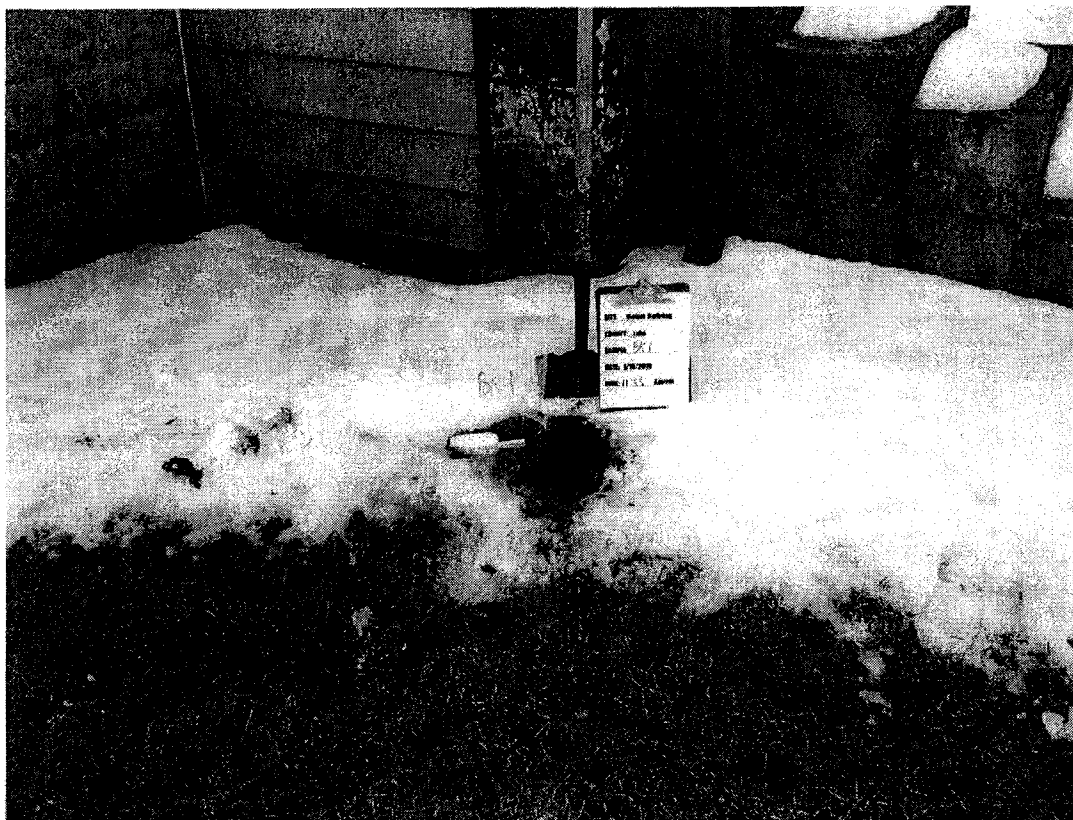


Site:	Metals Refining Site
Site ID:	INN000509964
Date:	1/19/10
Weather:	Cloudy Cold
Sample ID:	OS3
Sample Type:	XRF Soil Screening Sample
Description:	Sample was collected on the North West portion of property



Site:	Metals Refining Site
Site ID:	INN000509964
Date:	1/19/10
Weather:	Cloudy Cold
Sample ID:	OS4
Sample Type:	XRF Soil Screening Sample
Description:	Sample was collected on the South West portion of property



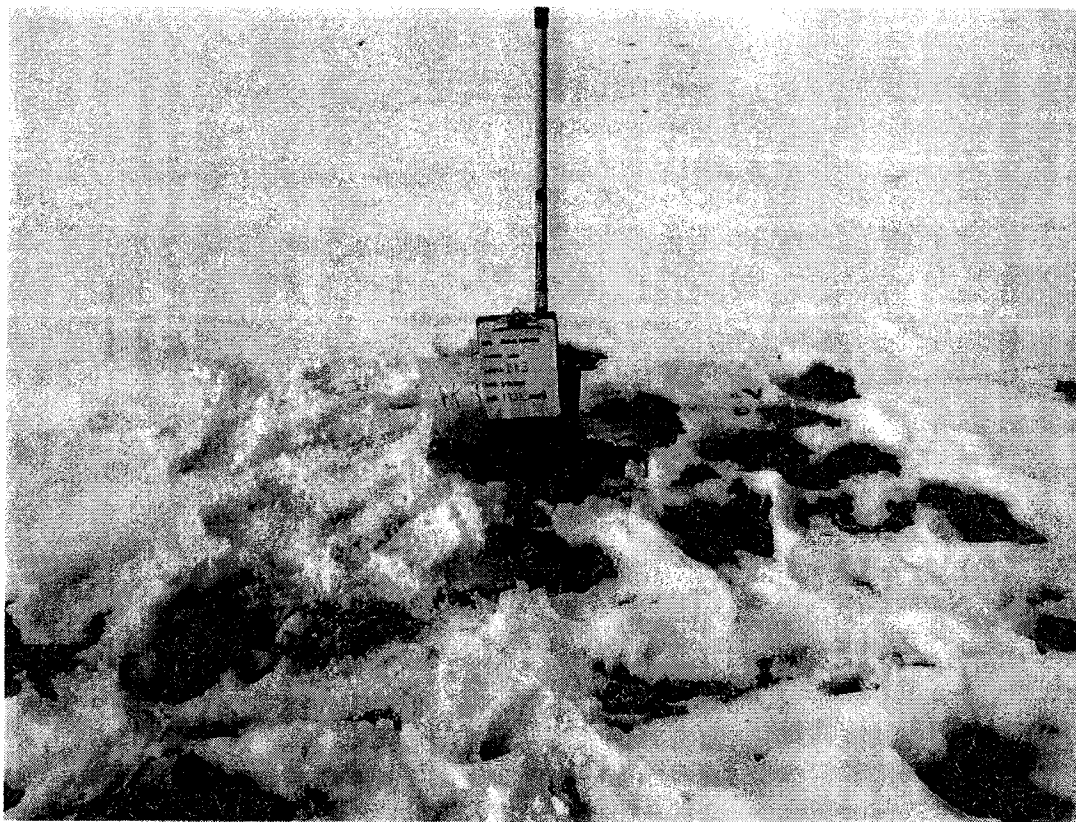


Site:	Metals Refining Site
Site ID:	INN000509964
Date:	1/19/10
Weather:	Cloudy Cold
Sample ID:	BK1
Sample Type:	XRF Soil Screening Sample
Description:	Sample was collected at 1344 Sherman drive

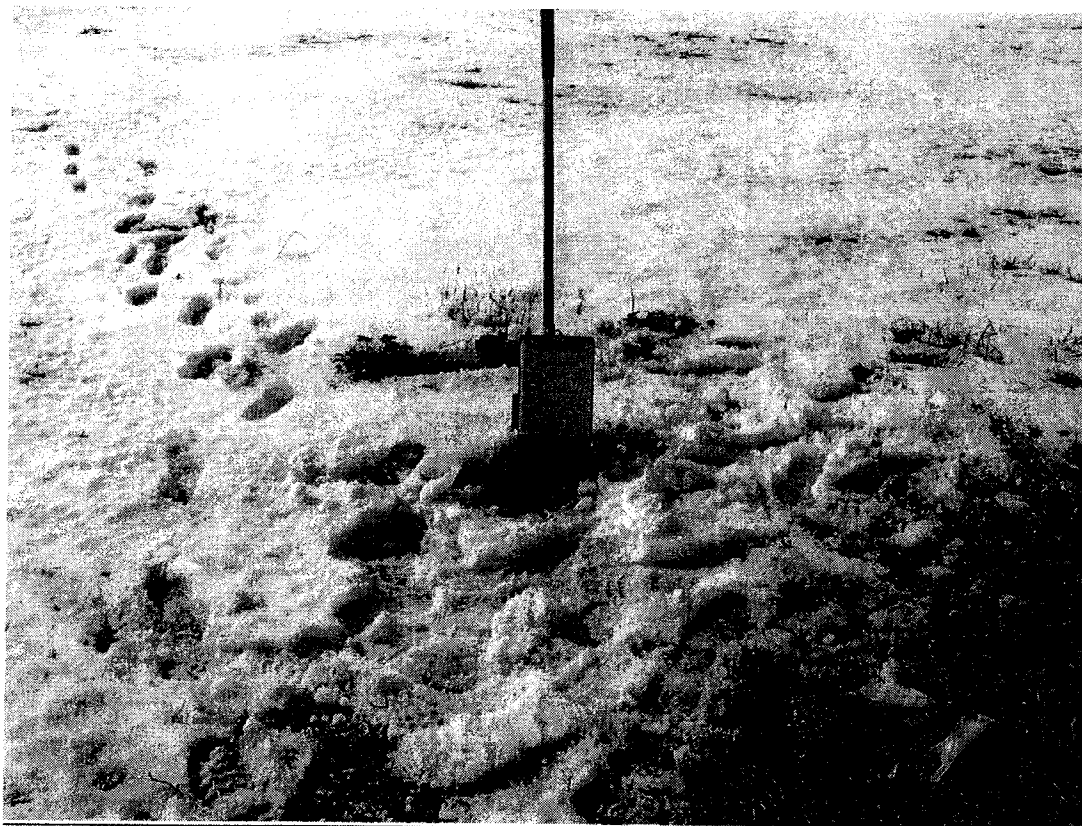




Site:	Metals Refining Site
Site ID:	INN000509964
Date:	1/19/10
Weather:	Cloudy Cold
Sample ID:	BK2
Sample Type:	XRF Soil Screening Sample
Description:	Sample was collected in Park across from 1109 Lyons Street



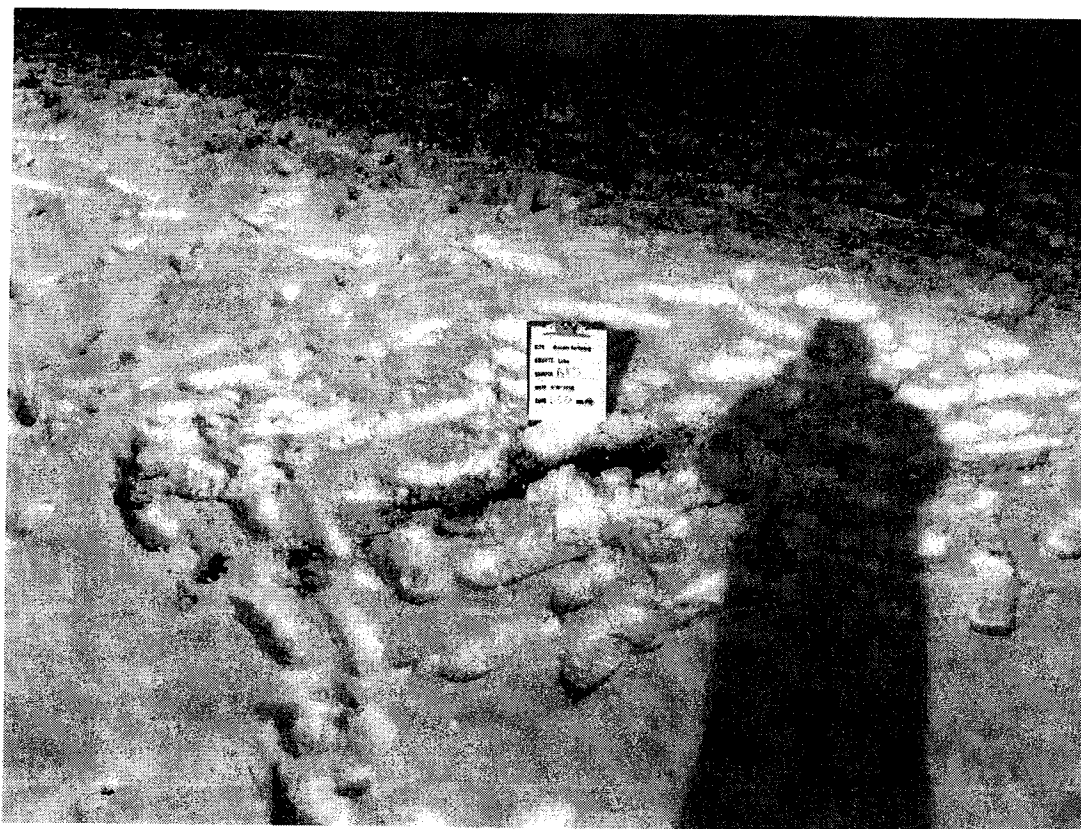
Site:	Metals Refining Site
Site ID:	INN000509964
Date:	1/19/10
Weather:	Cloudy Cold
Sample ID:	BK3
Sample Type:	XRF Soil Screening Sample
Description:	Sample was collected in the abandoned lot at the corner of Conkey & Tapper Streets



Site:	Metals Refining Site
Site ID:	INN000509964
Date:	1/19/10
Weather:	Cloudy Cold
Sample ID:	BK5
Sample Type:	XRF Soil Screening Sample
Description:	Sample was collected at the corner of Columbia and Kenwood Streets.



Site:	Metals Refining Site
Site ID:	INN000509964
Date:	1/19/10
Weather:	Cloudy Cold
Sample ID:	BK6
Sample Type:	XRF Soil Screening Sample
Description:	Sample was collected on Konkey Street near the corner of Konkey and Rhodes.

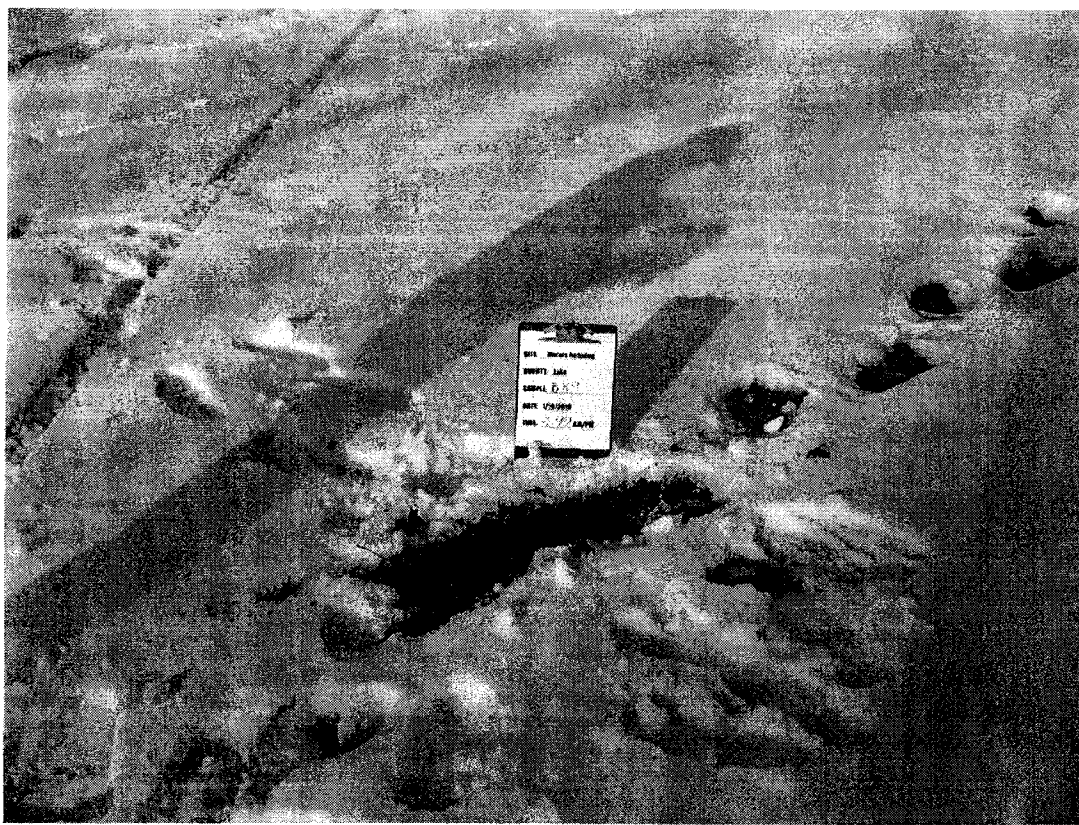


Site:	Metals Refining Site
Site ID:	INN000509964
Date:	1/19/10
Weather:	Cloudy Cold
Sample ID:	BK7
Sample Type:	XRF Soil Screening Sample
Description:	Sample was collected in Triangle Park off May Street



Site:	Metals Refining Site
Site ID:	INN000509964
Date:	1/19/10
Weather:	Cloudy Cold
Sample ID:	BK8
Sample Type:	XRF Soil Screening Sample
Description:	Sample was collected at corner of Arizona and Cleveland Streets





Site:	Metals Refining Site
Site ID:	INN000509964
Date:	1/19/10
Weather:	Cloudy Cold
Sample ID:	BK9
Sample Type:	XRF Soil Screening Sample
Description:	Sample was collected at the Northwest corner of Delaware and Cleveland Streets

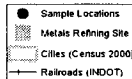
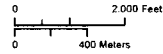
## ATTACHMENT L



# 2010 Screening Location Map, Metals Refining, Hammond, Lake County, Indiana



This map is intended to serve as an aid in general information only. This document is not intended to be used as a legal document.  
 Mapping By: Lantier High-City of Lake County  
 Date: January 27, 2010



**Source:**  
 Main Orthorectification  
 Data: This map was created using the State of Indiana's  
 Orthorectified Aerial Photography. Satellite imagery  
 was digitized by the State of Indiana's Department of  
 Transportation. The map is based on the 2000 Census  
 data. The locations are approximate.  
 Orthorectification: Obtained from the State of Indiana  
 Department of Transportation. The map is based on the  
 Map Projection: The State of Indiana. Map Datum: NAD 83

## ATTACHMENT M

2010 Screening Results Map, Metals Refining,  
Hammond, Lake County, Indiana.

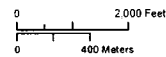






This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

Mapped By: Jennifer Wright, CTIC of Land O'Lakes  
Date: January 27, 2010



East C- cage



-  Screening Sample Location & Concentration Results (ppm)  
 Metals Refining Site  
 Cities (Census 2000)  
 Railroads (INDOT)



**Source:** Mon Orthophotography  
Digitized from the State of Indiana  
 Geographic Information Office Library. Sample locations  
 were digitized by E. Dismore based on T1, D10013  
 descriptions. The sample images were obtained JANUARY 19, 2011.  
 The locations are approximate.

**Orthophotography:** Obtained from Indiana Map Framework  
 Data Service (<http://www.in.gov/indiana-map-framework/>)  
Map Projection: NAD 83 Zone 15N Map Datum: NAD 83